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## ORIGINAL ARTICLES.

### THE SURGICAL TREATMENT OF ASCITES DUE TO CIRRHOSIS OF THE LIVER.[1]


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IN RESPONSE to an invitation from the Chairman of this Section, I will present for your consideration and discussion this evening a brief review of the facts which have been gathered during the past five years bearing upon the surgical treatment of cirrhosis of the liver.

Cirrhosis of the liver is admitted by all to be an incurable disease, ascites, enlargement of the spleen and hemorrhages into the alimentary canal constituting the terminal symptoms of this condition.

Dr. W. Hale White, in Guy's Hospital Reports for 1892, from an analysis of 34 cases of ascites which were followed to the end, and in which autopsies were made, concludes that the occurrence of ascites in cases of uncomplicated cirrhosis of the liver is of the gravest prognostic importance, the average duration of life being only about eight weeks after the first tapping; the patients who survived numerous tappings were generally found at the autopsy to have lesions other than those of uncomplicated cirrhosis. This view is also confirmed by H. Campbell Thompson in an article which appeared in *The Lancet* for July 20, 1901, in which as a result of 18 autopsies he concludes that cases of cirrhosis which survive numerous tappings are complicated by perihepatitis, chronic peritonitis, or some other pathological lesion which acts as a causative factor in the production of the ascites. Without quoting other confirmatory opinions it is safe to assume that a patient with cirrhosis of the liver who reaches the stage of ascites has before him a very short lease of life. While medical treatment can do much to relieve the distressing symptoms occurring in the early stages of this disease and judicious care and medication may perhaps in certain instances arrest its progress, in the presence of these grave terminal symptoms no drug or method of medical treatment is of any value whatever in averting the inevitable fatal termination.

Apparent recoveries occurring after the appearance of ascites have, however, been occasionally reported; but such recoveries are so rare that they may be justly regarded as medical curiosities. Autopsies, in cases of this kind, almost invariably show the presence of dilated, anastomosing branches between the portal and systemic venous circulation. The normal anastomoses between these two systems have been described by Sappy to be veins passing from the upper surface of the liver, between the two layers of the coronary ligament, to the under surface of the diaphragm, anastomosing there with the radicals of the phrenic vein, one or more veins accompanying the round ligament of the liver anastomosing with the internal mammary and deep epigastric veins and also veins in the regions of the retroperitoneal, esophageal, and hemorrhoidal plexuses.

Telma of Utrecht, after a number of postmortem observations, conceived the idea of increasing this anastomosis by creating adhesions between the surface of the liver and the diaphragm, the surface of the spleen and the adjacent parietal peritoneum, and between the great omentum and the anterior abdominal wall.

The first operation of this kind was performed by Vandermeule in 1889, and consisted in opening the abdominal cavity, evacuating the fluid and stitching the omentum to the anterior abdominal wall. The patient died of shock. The second operation was by Schelkly in 1891, same procedure. His patient died on the fourteenth day. A third case, operated on by Lens, recovered from the operation but showed no improvement in the symptoms.

The next report on the subject was furnished by Mr. Rutherford Morison of Newcastle-on-the-Tyne, who, unaware of the suggestion of Telma or of the work of the Continental surgeons, after numerous postmortem observations determined to favor Nature's method of cure by a far more complete operation than any previously employed. He proposed the following procedure: Under general anesthesia open the abdomen and evacuate the fluid, then rub the upper peritoneal surface of the liver and the under surface of the diaphragm with gauze sponges until raw, freely-bleeding surfaces are produced. The same procedure should be carried out on the outer surface of the spleen and its adjacent peritoneal surface. Finally, stitch the great omentum to a freshened peritoneal surface on the anterior abdominal wall. A glass drain should be introduced to the lower part of the pelvis through a separate suprapubic wound. The upper wound should then be closed and dressings applied. The fluid which collects in the pelvis should be frequently pumped out through the glass drainage-tube for a week or ten days until the daily secretion is markedly diminished. The tube may then be removed and the wound allowed to heal.

The first case in which he carried out this procedure was a doubtful one, the diagnosis of cirrhosis not being established. The patient recov-

[1] Read before the New York Academy of Medicine, Thursday Nov. 21, 1901.

ered from the operation, but there was no improvement in her symptoms and she died nineteen months later. His second case was a brilliant success. The patient recovered from the operation and was apparently completely restored to health. She lived two years in comfort and died from an attempt to repair the ventral hernia which followed the first operation. A very complete autopsy was made, a description of which I will give in the author's own words:

"At the postmortem Mr. W. G. Richardson removed the whole of the abdominal viscera and the parietes excepting the skin. He then injected the whole from the trunk of the portal vein. The liver, spleen and intestines seemed to be attached to the parietes chiefly by small, band-like adhesions. Many of these seemed to contain little except a blood-vessel, and in several of them such a vessel was four inches in length. The omentum was also firmly adherent to the abdominal wall by strong bands. In all of these adhesions innumerable injected vessels are readily seen passing from the omentum and viscera to the parietes. Many of them are fully the size of the radial artery. This specimen establishes our belief that an efficient anastomotic circulation can be brought about by operation. There can be no doubt that this patient was cured of ascites and that useful life was prolonged for her for two years by the operation."

In a subsequent article which appeared in *The Lancet* for May 27, 1899, Morison reports two additional cases, one not surviving the operation; the other was completely successful, the patient being alive at the end of two years without ascites.

While Morison's operation was not the first, as the idea was original with him, and as his method differed essentially from those of the Continental surgeons, and as he succeeded in curing two out of his four patients, in one instance being able years afterward to secure an autopsy which conclusively demonstrated the correctness of his views, he is, I think, entitled to the credit of establishing this new method of treatment.

As a result of the publication of Morison's successful operations there was awakened a very considerable amount of professional interest, and during the past three years quite a large number of articles on the subject have appeared and numerous cases involving operation have been reported by various surgeons.

It is to be regretted that in many of these reports little care has been taken in giving details in regard to the clinical history or methods of operation which would enable us to form more definite ideas as to the causes of mortality and the conditions which favor the success or failure of the procedure. As notable exceptions to this may be mentioned the report published by Dr. Robert F. Weir in the *Medical Record* for Feb. 11, 1899, in which he gives us not only a clear and comprehensive description of his case, but also a masterly review of the literature of the subject which had appeared up to that time; the article by Dr. F. Tilden Brown in the Medical and Surgical Report of the Presbyterian Hospital for 1900, in which he records the complete history of a patient cured by operation and also the paper by Packard and Le Cont published in the *American Journal of the Medical Sciences* for March, 1901. In this latter communication 22 cases are reported, from which the authors conclude that the operation is not necessarily accompanied by a high rate of mortality, and encourage us to believe that recovery, at least from the ascites, may be expected in a fair proportion of cases.

Adverse criticism, however, has not been wanting. The most recent contribution to that side of the subject is the article by Dr. H. Campbell Thompson, published in *The Lancet* for July 20, 1901. In this the writer states that it is his opinion that in no case has ascites due to uncomplicated cirrhosis been cured by operation, but that the successes have been in cases in which the ascites was due to some complicating lesion, such as perihepatitis or chronic peritonitis. While such an opinion unsupported by clinical or pathological facts should not influence us in our judgment regarding the value of this operation, it is to be regretted that in the majority of reported cases no data are given which would enable a reviewer successfully to controvert such a statement. It is therefore suggested that in order to arrive at definite and accurate conclusions in regard to the value of this operation, future reports should give us the age and sex of the patient, history of syphilis, tuberculosis, alcohol or peritoneal inflammation, duration of ascites, number of tappings, condition of heart, lungs and kidneys, exact condition of abdominal viscera observed at operation, anesthetic used, method and duration of operation, method of drainage, subsequent treatment, immediate and remote result.

The analysis of 40 or 50 cases fully reported in this manner would enable us to estimate justly the value of this procedure and form definite ideas regarding its mortality, the most favorable time for surgical intervention, as well as the most approved methods of procedure.

In the writer's opinion the operation is still in its experimental stage. Sufficient data are not at hand to enable us to form definite and lasting conclusions. At present there is apparently a high rate of mortality, due, I believe, to the fact that the majority of physicians are unwilling to advise this method of treatment except in cases in which all hope has been abandoned.

In the accompanying table I have endeavored to present the important facts as far as I have been able to obtain them in 60 cases. In many of the reported cases the histories are so imperfect that few facts of value could be gleaned. A large number of these cases have never before been published but have been obtained by the writer by personal communication. I have desired in the arrangement of this table to suggest a plan of

reporting these operations which will bring out the salient facts just referred to and which will enable us later, when a sufficient number of cases have been collected, to estimate justly the real value of the procedure. I desire before presenting this table to report briefly my own experience in this operation, which, although somewhat discouraging, has not convinced me that the operation may not be of value in more carefully selected cases.

*Case I.*—A woman, aged fifty-six years, admitted to the medical department of the City Hospital in the spring of 1899 suffering from ascites. There had been a prolonged history of alcoholism; no definite syphilitic history. Previous to the development of the ascites there had been a long period of ill health, the symptoms of which were gastric disturbances, shortness of breath, anemia and general weakness. She was under observation for several weeks, during which time she was tapped on one or more occasions. The urine was abundant, containing a trace only of albumen and hyaline casts.

Operation under ether anesthesia. Median incision in upper segment of abdomen. Large amount of fluid evacuated. The upper surface of the small, nodular liver and the outer surface of the spleen, together with the opposing parietal peritoneal surfaces, were vigorously rubbed with sterile gauze until they bled freely. The parietal peritoneum on each side of the abdominal wound was also rubbed in the same manner, and the omentum drawn down and firmly held in contact with the denuded surface by means of sutures which closed the abdominal wound. A smaller abdominal incision was next made just above the pubes and the rest of the fluid siphoned out. A glass drainage-tube was introduced through the lower opening into the pelvic cavity. The wounds were dressed separately. Two special nurses were detailed to the care of this case, whose duty it was to remove the lower dressing every hour during the day and every two hours at night, and with a pledget of sterile gauze to suck up all the fluid which would accumulate in the pelvis, introduce a dry piece of gauze into the glass tube and apply fresh sterile dressings—the procedure to be carried out with gloved hands and under the strictest aseptic precautions.

Considerable shock followed the operation and the patient was carried through the night only by the most energetic stimulation. The following day, however, she rallied somewhat but seemed exhausted, and although the pulse and temperature was not elevated she seemed seriously ill. There was practically no secretion of urine, and she died two days later in a condition of typical uremic coma.

*Case II.*—Operated upon at the City Hospital about the same time. A woman, forty-eight years of age, thin, anemic, and weakened by prolonged illness and dissipation. History of alcoholism and other vices for many years. Duration of ascites, two to three months. The operative procedure was practically the same as in the first instance, with the exception that chloroform was used instead of ether. The operation in this instance was somewhat prolonged, owing to difficulty in siphoning out the large amount of fluid from the pelvis, and also from the fact that in rubbing the parietal peritoneum and the surfaces of the liver and spleen there was an abundant oozing of blood which necessitated a good deal of subsequent sponging. All this delayed the operation, and the patient, having lost a considerable quantity of blood, collapsed on the table. She recovered, however, under vigorous hypodermic and rectal stimulation, only to collapse again after her return to the ward. From this she did not rally. She died within the next twenty-four hours.

*Case III.*—An Italian man, about forty years of age, who had been only moderately alcoholic and without history of syphilis, was admitted to the City Hospital in the winter of 1900. His general condition was fair; there was no albuminuria, but the abdomen was greatly distended. He had not been tapped, and was thought to be a favorable subject for operation. Chloroform was employed and the same procedure carried out as in the previous cases.

He bore the operation well and recovered nicely from the anesthetic. The following day his condition seemed very satisfactory; the pulse was of good quality and there was only a slight elevation of temperature. He seemed bright and cheerful. This continued for three days, when he began to vomit and complained of pain in the abdomen and general feelings of illness. The temperature rose. There was tenderness over the entire abdomen with slight distention and muscular rigidity. The bowels moved slightly as the result of enemata, but no cathartics were retained. The patient became delirious, the urine scanty and albuminous, and he died at the end of five days of peritoneal sepsis.

*Case IV.*—That of a man, about forty years of age, who was admitted to the City Hospital in January, 1901. He had a cough and had been feeling ill for several months, and of late had noted a gradual enlargement of the abdomen. There was an evening rise in temperature and an occasional night sweat. Examination revealed the presence of a tuberculous process in the right apex and a marked distention of the abdomen which precluded the possibility of obtaining any data as to the size of the liver and spleen. His case was regarded as one of tuberculous peritonitis and an operation proposed. He readily consented as he was failing rapidly in flesh and strength.

Under chloroform anesthesia an incision was made in the median line of the abdomen, when it was quickly seen that the case was one of cirrhotic ascites. The liver was small, hard and nodular, and the spleen enormously enlarged. As he did not bear the anesthesia well, the fluid was quickly evacuated, the upper surface of the liver and the adjacent parietal omentum were quickly rubbed with gauze, and the omentum

| Operator. | Sex. | Age. | History of Alcohol. | Syphilis, Tuberculosis Peritonitis. | Duration of Ascites | Number of Tappings. | Heart. | Kidneys. | Anesthetic. | Duration of Operation. |
|---|---|---|---|---|---|---|---|---|---|---|
| Van der Meule | | | | | | | | | | |
| Schelkly | M | | yes | | | | | | | |
| Lens | M | 61 | | | | | | | | |
| Morison | F | 42 | no | no | | 48 | | | | |
| " | F | 39 | yes | no | | 5 | | | | |
| " | M | 42 | yes | no | | | | | chloroform | |
| " | F | 54 | no | no | | 1 | | | | |
| Von Eiselsberg | M | 9 | no | no | | | mitral lesion | albumin & casts | | |
| Narath | M | 59 | | | | 2 | | | | |
| Weir | M | 30 | yes | | 2 years | 8 | | casts | ether | 1 hour |
| Neumann | F | 45 | yes | | | | | albuminuria | | |
| Ries | F | 38 | | | no ascites | | | | | |
| Narath | F | 67 | | | | | | | | |
| Folmer | M | | | | | | | | | |
| Turner | M | 45 | yes | syphilis | | 1 | | | | |
| " | M | 52 | yes | | | 1 | | | | |
| Grinon | F | 47 | | | | | | | | |
| Babroff | F | 38 | | | | | | | | |
| Bossowski | F | 9 | | | | | | | | |
| Packard and Le Cont. | M | 63 | yes | | 5 weeks | 4 | lesion | no albumin | ether | |
| " " | M | 52 | yes | syphilis | 3 weeks | 1 | | no albumin | ether | |
| Frazier | M | 45 | yes | syphilis | | 5 | endocarditis | albumin | ether | |
| Bradford | M | 2½ | no | no | | 8 | | albuminuria | ether | |
| Burrill | M | 40 | yes | no | | many | | albuminuria | ether | |
| Woolsey | M | | yes | | | none | | | | |
| " | M | | yes | | | few | | | ether | |
| " | M | | yes | | | few | | | | |
| " | M | | yes | | | few | | | ether | |
| " | F | | no | | | 2 | | | ether | |
| " | M | | yes | | | 2 | | | ether | |
| | | | | | | | | | ether | prolonged |
| Tilton | M | 42 | yes | no | | | | no albumin | ether | |
| Lloyd | F | 54 | no | no | 1 year | 2 | no | no albumin | | |
| Brown, F. T. | M | 41 | yes | no | | 9 | no | albumin & casts | ether | |
| Gerster | M | 35 | yes | no | | numerous | | albumin & casts | ether | |
| | | | | | | | | albumin & casts | chloroform | |
| Roberts, J. B. | M | 49 | no | no | | | | | | |
| " " | M | 54 | yes | no | | 8 | | albumin & casts | ether | |
| Jelks | M | 59 | | | | 2 | | | cocaine | |
| Meyer, Willy | M | | | | | | | | | |
| " " | | | | | | | | | | |
| | | | | | | numerous | | | | |
| Fisk | F | 6 | yes | no | 10 months | 8 | | negative | ether | |
| Curtis, B. F. | M | 46 | | | | | | | | |
| " " | F | 50 | | | | numerous | | negative | | |
| Syms, Parker | M | 40 | yes | no | | | | albumin | | |
| " (Roth) | M | 40 | yes | no | | 3 | | no albumin | ether | |
| Le Boutillier | M | 33 | yes | no | 7 weeks | 2 | lesion | albumin & casts | | |
| Kelly, J. E. | F | 35 | yes | no | 2 years | several times | no | no albumin | | |
| Mongour | | | | | | | | | | |
| " | | | | | | | | | | |
| Markoe, F. H. | F | 24 | no | no | | | | | ether | |
| " " | M | 51 | yes | no | | numerous | | | ether | |
| " " | M | 10 | yes | no | | | | | ether | |
| " " | M | 40 | yes | no | | | | | ether | |
| " " | M | 24 | yes | no | | | | | ether | |
| Brewer | F | 56 | yes | no | | | | | ether | |
| " | F | 48 | yes | ? | several weeks | 1 | | albumin & casts | chloroform | prolonged |
| " | M | 40 | yes | no | 3 months | | | no albumin | chloroform | |
| " | M | 40 | no | tuberculous | | | | albuminuria | chloroform | |
| " | M | 30 | no | no | 2 months | no<br>no | lesion | no albumin | chloroform | |
| Peck, C. H. | M | 47 | moderate | no | 2 months | | no | no albumin | ether | |
| Dwight, E. W. | | | | | | | | | | |

| Condition of Liver. | Condition of Spleen. | Perihepatitis. | Chronic Peritonitis. | Drainage. | Description of Operation. | Immediate Result. | Remote Result. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| | | | | no | suturing omentum to abdominal wall | death | | shock |
| | | | | no | " " | death | | 14th day |
| | | | | no | " " | recovery | no improvement | lived 6 months |
| | | | | yes | Morison operation | recovery | no improvement | " 19 " |
| | enlarged | | | yes | " " | recovery | ascites cured | " 2 years |
| | enlarged | | | yes | " " | recovery | ascites cured | " 2 " |
| | enlarged | | | yes | " " | death | | |
| | enlarged | | | no | omentum and gall bladder sutured to parietes | recovery | ascites cured | " 2 " (2 operations) |
| | enlarged | | | no | omentum sutured to parietes | recovery | | |
| hypertrophic cirrhosis | enlarged | no | no | yes | Morison operation | death | | 5th day peritonitis |
| | enlarged | | | no | omentum sutured to parietes | recovery | ascites cured | lived 6 months |
| | | | | no | " " | recovery | cured | only symptom hemorrhages |
| | | | | no | " " | recovery | no improvement | |
| | | | | no | " " | recovery | no improvement | |
| | enlarged | | | no | surface of liver freshened | recovery | cured | lived 4 months |
| | | | | no | " " | recovery | unimproved | |
| | | | | no | omentum stitched under parietal peritoneum | recovery | improved | |
| | | | | no | omentum sutured to parietes | recovery | unimproved | |
| | | | | | cholecystotomy | recovery | | |
| | enlarged | | | yes | Morison operation | recovery | unimproved | lived 61 days |
| | not enlarged | | | yes | " " | death | | |
| | enlarged | | | no | omentum sutured to parietes | recovery | cured | lived 3 months |
| hypertrophic | | no | no | no | omentum sutured between edges of wound | recovery | unimproved | lived 2½ months |
| atrophic | enlarged | no | | no | " " | recovery | unimproved | lived 1 month |
| | | | | yes | | death | | peritonitis |
| | | | | yes | | death | | exhaustion |
| | | | | yes | | death | | exhaustion |
| | | | | yes | | death | | exhaustion |
| | | | | yes | | recovery | improved | less frequent tappings |
| | | | | yes | | recovery | improved | " " |
| atrophic | enlarged | no | no | | | death | | shock; operated also on hernia |
| atrophic | enlarged | no | no | | | recovery | cured | well 2 years later |
| atrophic | enlarged | no | no | | | | | |
| atrophic | enlarged | no | no | yes | Morison operation | recovery | cured | well 26 months later |
| atrophic | | | | | " " | death | | had had severe hemorrhages |
| atrophic | | | | | | recovery | unimproved | lived 6 weeks |
| | | | | | | death | | |
| | | | | | | recovery | ? | |
| | | | | | omentum sutured to abdominal wall | recovery | cured | lived 4 months |
| | | | | | " " | death | | lived 2 weeks |
| | | | | | Morison operation | death | | 6th day |
| atrophic | enlarged | no | no | no | omentum sutured between muscle and peritoneum. | recovery | unimproved | |
| atrophic | enlarged | | | | " " | recovery | improved | not tapped since Nov. 17 |
| atrophic | enlarged | | | | " " | recovery | unimproved | lived 5 weeks |
| hypertrophic | enlarged | | | no | " " | death | unimproved | uremia; 7 days |
| hypertrophic | enlarged | no | | no | | death | | exhaustion from hemorrhage |
| atrophic | enlarged | yes | no | yes | omentum sutured to parietes | recovery | cured | no ascites; 2 years later |
| atrophic, nodular | enlarged | | no | yes | | recovery | | |
| | | | | yes | | death | | subsequent history unknown |
| atrophic | enlarged | | thickened peritoneum | | laparotomy only | recovery | improved | tapped every 14 days |
| atrophic | enlarged | | | no | omentum sutured to parietes | recovery | unimproved | tapped at intervals |
| atrophic | enlarged | | | | " " | recovery | unimproved | no autopsy |
| atrophic | enlarged | | | | laparotomy only | death | | death 5 months; no ascites |
| atrophic | enlarged | | | | " " | recovery | improved | |
| atrophic | enlarged | no | no | yes | Morison operation | death | | uremia |
| atrophic | enlarged | no | no | yes | " " | death | | shock |
| atrophic | enlarged | no | no | yes | " " | death | | peritonitis |
| atrophic | enlarged | no | no | no | | recovery | improved | tapped twice in 3 months |
| atrophic, nodular | enlarged | no | no | yes | omentum sutured to parietes | death | | peritonitis following later drainage |
| atrophic, nodular | enlarged | no | no | no | Morison operation | recovery | improved | 5 subsequent tappings, last 2 months after operation; 5 months after operation no ascites |

stitched to the anterior abdominal wall, which was tightly closed. The operation required only about ten minutes, and the patient recovered quickly from the anesthetic; there was no vomiting and no shock. The following day he expressed himself as greatly relieved. The wound healed kindly; there was no rise of temperature or other untoward symptoms. The fluid quickly reaccumulaed and he was tapped at the end of three weeks, again six weeks later. The appetite improved; he gained strength, and, although the cough was still troublesome, his abdominal condition was greatly improved. He was discharged in March.

*Case V.*—L. P., aged thirty years, native of Porto Rico, was admitted to the Private Patients' Pavilion of Roosevelt Hospital November 9th. No history of alcohol or syphilis could be obtained. His illness began about one year ago with an attack of dysentery. This was subacute from the first and gradully passed into a state of chronic colitis which has since continued. During the two months prior to his admission he had noticed a gradual enlargement of the abdomen and progressive emaciation. Weight 90 pounds.

Examination: Heart and lungs negative; abdomen greatly distended with fluid; no liver dulness could be made out and the spleen was not palpable. Examination of the rectum by sigmoidoscope revealed the presence of three large superficial ulcers in the lower six inches of the rectum. Temperature normal, pulse between 90 and 100. This case was also regarded as one of tuberculous peritonitis.

Under chloroform anesthesia an incision was made in the median line and the abdomen freely opened. There were no evidences of a tuberculous process in the peritoneum, which seemed to be quite normal in appearance; the sigmoid and rectum were greatly thickened and a number of glands were palpable in the mesentery. The liver was small, hard and nodular, and adherent to the under surface of the diaphragm. The spleen was enormously enlarged and its outer surface attached to the parietal peritoneum by dense adhesions. The omentum was stitched to the anterior abdominal wall and the incision tightly closed. Duration of operation, less than fifteen minutes. No shock followed. The temperature remained below 100° F. for one week, but the fluid reaccumulated so rapidly that the lower angle of the incision was opened and a tube introduced. This was followed by peritonitis and death.

It will thus be seen that all of these cases were true examples of ascites due to cirrhosis of the liver. Careful inspection and palpation at the time of operation in each showed a small liver, large spleen, and no evidence whatever of perihepatitis, chronic or tuberculous peritonitis. All were greatly distended with fluid and apparently in the last stages of toxemia from the disease. All but one had marked evidences of nephritis. One died of uremia, due to my mistake in using ether for anesthesia in a patient with marked evidence of nephritis; one from shock, due probably to faulty technic resulting in too long an exposure on the operating table; the third died from septic peritonitis, due in all probability to faulty technic in managing the drainage subsequent to operation.

The fourth case, although the most unfavorable of all, recovered from the operation without an untoward symptom, for the following reasons: Only a very small amount of chloroform was used, the operation was completed in about ten minutes, and no permanent drainage was employed, removal of the fluid being accomplished by subsequent tappings.

The fifth case did well for one week, showing no fever or signs of peritonitis. Symptoms of bronchopneumonia and later other evidences of general sepsis including a peritonitis, followed the subsequent introduction of a drainage-tube.

I desire to say in conclusion that, in reviewing the statistics furnished by this table, it will be seen that at least six cases have been cured of ascites by this procedure and have remained well for a period of two years or more; six others have been relieved of this symptom for from two to six months, but have died, either without a return of the ascites, or have not been under observation long enough to demonstrate that the cure is permanent. Another case, that of a patient suffering from hemorrhages from the alimentary canal, was promptly cured by this operation, and a number of others have been materially improved. Thirty-eight have recovered from the operation, and, when we consider that in the great majority of instances these patients were in the last stages of an incurable disease, and if we are to accept the statements of White and Thompson, within a few weeks of an inevitable death, this fact should, I think, encourage our medical friends to suggest the operation at an earlier and more favorable stage of the disease. If this is done, I firmly believe that later statistics will show a substantial improvement over those I am able at this time to present.

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## ON THE ETIOLOGY OF CIRRHOSIS OF THE LIVER.[1]

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As Dr. J. C. Wilson well said in his remarks before this Academy several weeks since, no definition can be framed which will include, both pathologically and clinically, all forms of so-called cirrhosis of the liver. A careful examination of the literature of hepatic disorders will show that only three distinct primary varieties of the disease have gained anything like a fixed or unequivocal position in medical terminology. These are (1) venous or atrophic cirrhosis, the original cirrhosis of Laennec; (2) hypertrophic cirrhosis, *maladie de Hanot*, and (3) biliary cirrhosis. A proliferation of the connective-tissue

[1] Read before the Section on General Medicine of the New York Academy of Medicine, Dec. 17, 1901.

stroma of the organ constitutes the one underlying anatomicopathological process common to all varieties. This new tissue may never reach the stage of cicatricial contraction, but remain always in a condition of proliferation, the liver thus continuing in a state of hypertrophy until the termination of the case. For the purposes of this paper only these three important forms of cirrhosis, upon the occurrence of which pathologists are generally agreed, will be considered.

*Venous or Atrophic Cirrhosis.*—This is by far the most common form of chronic interstitial hepatitis. Many writers describe no other. It is the form of the disease always implied when no further distinguishing designation is used. The causes of venous cirrhosis may be classified as predisposing and determining, of which the latter are by far the most important, the predisposing influences being merely those which facilitate the operation of the actual exciting causes. According to Giovanni of Padua predisposition may be said to consist in an excessive morbidity of the lymph-corpuscles which enter into the structure of the gland. Age and sex may be ranked as occupying positions of prime importance among the predisposing factors. In an analysis by the writer of 4,737 deaths from cirrhosis of the liver reported to the New York Health Board during the eleven years from 1889 to 1899, inclusive, the ages of the decedents were as follows: Under one year of age, 9; total under five years of age, 11; five to ten, 11; ten to fifteen, 9; fifteen to twenty-five, 553; twenty-five to thirty-five, 1,061; thirty-five to forty-five, 1,196; forty-five to fifty-five, 959; fifty-five to sixty-five, 560; sixty-five to seventy-five, 146; seventy-five to eighty-five, 14. It will be observed that the period from thirty-five to forty-five shows the largest number of victims of cirrhosis, while that between twenty-five and thirty-five is a good second, and from forty-five to fifty-five not far in the rear. This accords very closely with facts already well known to clinical observers. Notwithstanding Virchow's report of an autopsy in a congenital case, some writers have doubted the existence of the disease in infancy, but the presence in this list of 9 cases under one year of age, with a total of 11 under five, shows beyond dispute that cirrhosis of the liver may occur at an early period of life. With one exception all of the deaths in infants prior to one year of age were of males. However, a very interesting case of a girl baby, aged sixteen months, who apparently recovered, was reported by Dr. R. Abrahams of this city about two years ago. The case, with photographs, was presented to the New York County Medical Association (*Medical Record*, Jan. 6, 1900). Of the patients in the foregoing list 2,980, or 62.28 per cent., were males, and 1,757, or 37.77 per cent., were females. Of 37 cases treated at the Roosevelt Hospital in 1899 and 1900, notes of which were furnished to the writer by Dr. W. P. Millspaugh, house physician, 27 were males while only 10 were females. These figures go to show that middle-aged males from thirty-five to fifty-five furnish by far the greater proportion of victims of cirrhosis.

A question of interest relates to the nationality of persons dying of hepatic disorders. In the Health-Board publications cases of cirrhosis and hepatitis are grouped together in the tables referring to nativity. The writer has analyzed the returns for the nine years from 1889 to 1897, inclusive, the reports for 1898 and 1899 not covering this subject. During these nine years the nativities of cases from the five principal nationalities contributing to the list of deaths from cirrhosis and hepatitis were as follows: United States, 1,112; Ireland, 1,063; Germany, 774; England, 121; Italy, 98—a total of 4,168. As shown by the figures 1,112, or slightly more than 26 per cent., were native-born, while 3,056, or a little more than 73 per cent., were of foreign birth. The addition of natives of all other foreign countries contributing to these deaths would considerably increase the disparity between native-born and foreign subjects. These figures go to show that the foreign-born population of this city are vastly more liable to liver complaints than those who are native. Of the alien population the Irish would appear to furnish a somewhat greater proportion of victims to hepatic maladies than the natives of any other country, with Germany not far behind. No statistics relating to occupation are furnished by Health-Board publications. Of the Roosevelt Hospital cases just cited there were but one bartender and one saloonkeeper. Seven of the cases were ordinary laborers, while the remainder were scattered among various occupations. The observations of many eminent writers substantially agree, however, that persons pursuing sedentary occupation are much more liable to cirrhosis, as well as to other forms of hepatic disease, than those whose vocations keep them actively employed in the open air.

Among the exciting or determining causes of cirrhosis of the liver the *habitual imbibition of alcoholic stimulants*, especially strong spirits, such as whiskey, gin, and brandy, takes first rank. Of the 37 cases at Roosevelt Hospital, 29 presented alcoholic histories. Of 17 patients under the writer's own observation, all save two had been more or less addicted to the use of ardent spirits, usually in various forms. It must not be inferred, however, that the milder malt beverages consumed too largely of late years are innocuous in this direction. The statistics of the New York Health Board already referred to indicate that our beer-drinking German fellow-citizens supply almost as large a proportion of fatal cases of this disease as do those from Ireland who are popularly credited with being partial to more potent fluids. A German brewer, under the writer's care, who died a few months since of a typical hepatic cirrhosis after more than a dozen tappings, had consumed large quantities of beer daily, to the entire exclusion of strong spirits, for many years prior to his illness. Alcohol appears to have an elective affinity for the liver. Giof-

fredi (quoted by Semmola, Twentieth Century Practice) observed that if a cat were poisoned by alcohol administered subcutaneously, a third of the injected fluid would be found in the liver, a fifth only in the brain, a less amount in the kidneys and lungs, and a mere trace in the muscles and blood. If chronic poisoning be produced in an animal, alcohol will be found in the liver many days after its suspension and after its total disappearance from the other organs and from the blood. Lancereaux maintains that the *vin ordinaire* of France is a common cause in that country. Of 210 cases he found that in 68 cases this disease could be traced to no other cause except excess in this wine. Some writers believe that the influence of alcohol is wrought upon the liver by first producing a gastro-intestinal catarrh and that the resulting fermentative products of meat-digestion being absorbed and conveyed to the liver, gradually set up the morbid changes which eventuate in this disease. However this may be, clinical observers everywhere are agreed that the habitual use or abuse of alcohol is responsible for the vast majority of cases of chronic interstitial hepatitis in all civilized countries. Murchison claims never to have seen a case due to any other cause. In this connection it may be stated that a most dangerous practice consists in the ingestion of alcoholic beverages when the stomach is comparatively empty, for example, before meals and during the hour before retiring. Active exercise while drinking tends to diminish to some extent the liability to cirrhosis, as well as to other diseases, by promoting the speedy combustion or elimination of the poison, thus reducing the toxicity of the fluids and plasma. The ingestion of food also greatly modifies the injurious action of this substance upon the liver.

*Syphilis* has long been credited with an important influence in the causation of hepatic cirrhosis, Virchow having been one of the first to illuminate the subject of visceral syphilis and to demonstrate the occurrence of sclerosis of the liver from syphilitic infection (*Virchow's Archiv*, Vol. XV., p. 281. *Vide* also Lancereaux, "A Treatise on Syphilis," Syd. Soc. Edition). Of the cases above cited at Roosevelt Hospital, 3 gave syphilitic histories. The difficulty of obtaining information relating to the past occurrence of this disease is, however, well known. It is no doubt in not a few instances associated with alcoholic excess in the production of the trouble.

*Malaria* is credited by most writers with a causative influence in cirrhosis of the liver. Italian physicians especially, who see much malaria, believe it to possess an important etiological relation to cirrhosis. Osler (Practice of Medicine, 1901), however, states that in an extensive experience with malaria in the wards of the Johns Hopkins Hospital during the last nine years not a single case of cirrhosis due to this cause was seen. It is at any rate highly probable that the repeated attacks of hepatic congestion which mark the course of malaria at least strongly predispose the interstitial structure of the organ to inflammation.

Certain other *infectious diseases*, notably *typhoid fever*, have of late come to be regarded as causes of cirrhosis. The researches of Frerichs, Liebermeister, Cornil and Ranvier, Hanot and others, show that the liver is profoundly involved in the morbid changes of typhoid. The pathogenic mechanism would appear to be a double one relating both to the direct action of the bacillus and to the effects of the toxin. It is undoubtedly true that cases of cirrhosis in which all other causative influences are absent are met with dating from an attack of typhoid fever. Scarlatina, measles, cholera, smallpox and yellow fever have also been mentioned as standing in an etiological relation.

*Overeating* and, especially, *excessive indulgence in highly-spiced foods* may lay the foundation for hepatic cirrhosis. It is stated that the disease is very common in certain districts of India where the use of much spice is prevalent. It cannot be doubted that the liver readily reacts to the absorption of certain irritating food-products from the gastro-intestinal canal. Some of these might very reasonably be supposed to be capable of giving rise to connective-tissue inflammation. The cause of this process in the liver is probably only an exaggeration of its normal function, excited either by an abnormal stimulus or by an excessively increased physiological action (Semmola).

*Certain mineral poisons*, such as antimony, arsenic, and notably lead and phosphorus, have the power to set up irritative hyperplasia of the connective tissue of the liver. These metals accumulate in the organ in preparation for elimination. Lead, according to Potain, produces a marked sclerotic action on the liver, and Lafitte was able to excite true cirrhosis in rabbits by the continued administration of salts of lead. Lancereaux observed the disease among copper-smelters who were absolutely temperate.

It has been recently claimed by Von Kahlden (*Münch. med. Woch.*, Oct. 5, 1897) that cases of *acute yellow atrophy* of the liver which are not rapidly fatal develop into typical examples of cirrhosis. Marchand found that the liver of a woman who had six months previously suffered from an attack of acute yellow atrophy showed both macroscopically and microscopically a picture very closely resembling cirrhosis. Stroebe reports a similar case, while the case reported by Von Kahlden presents a third example of cirrhosis developing from acute yellow atrophy. If the views of Von Kahlden are borne out by further investigation, the causes of acute atrophy may also be regarded as indirectly productive of cirrhosis.

Among other causes of hepatic cirrhosis mentioned by various writers may be mentioned tuberculosis, cardiac disease, malignant growths, diabetes, ptomain-poisoning, chronic poisoning from sulphuric ether, inherited tendency, fright,

and traumatism. It will be observed that most of these latter causes produce secondary cirrhosis; the others are probably of little importance.

*Hypertrophic Cirrhosis, Maladie de Hanot.*—This form of cirrhosis, first accurately described by Hanot in 1875, is prominently mentioned by French writers, but appears to have attracted little attention elsewhere. In this affection the liver is uniformly enlarged and smooth, moderately granular on the surface and indurated. No data are offered to show how it can be distinguished during life from the hypertrophic liver of ordinary venous cirrhosis. It differs from that variety of the disease, however, in the tendency of the liver to remain enlarged. Sclerosis and contraction of the organ do not occur even in long-standing cases. The etiological factors appear to be quite similar to those of Laennec's cirrhosis. A greater proportion of cases, however, occur in early adult life.

*Biliary Cirrhosis.*—This form of cirrhosis consists fundamentally in a primary affection of the biliary reticulum, more especially in an angiocholitis or a peri-angiocholitis of the bile-ducts of small and medium caliber. The first result is a stasis of the biliary circulation followed by congestion and leading ultimately to permanent enlargement of the organ without tendency to sclerosis. It seems highly probable that the immediate cause of the trouble is an upward extension of some pathogenic influence through the biliary system. This theory has been advocated by Charcot, Goubault, and Chauffard, but it has not been definitely proved. The causal relations of this form of cirrhosis are still largely problematical. It is most frequently seen in young males of twenty to twenty-five and is in many cases alcoholic, but this influence is often absent.

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## ON THE TREATMENT OF THE ALCOHOLIC CIRRHOSES OF THE LIVER.[1]

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TREATMENT, when it is not empirical, must come from as perfect a knowledge as we can obtain of the condition to be treated.

Until a few years ago the atrophic cirrhosis of Laennec and the hypertrophic alcoholic cirrhosis were attributed to the direct action on the liver of alcohol in its different forms. While there is no question that alcohol may so act directly as shown by the unimpeachable experiments of Mertens, who produced cirrhosis in animals by the inhalation of alcohol, later researches show that alcohol acts locally on the gastro-intestinal tract, causing a catarrhal inflammation, denuding the mucous membrane of its protective epithelium and thus facilitating the entrance of toxic substances into the portal system. These toxic substances are numerous; they result from incomplete and faulty elaboration of food, as toxic albuminoids or toxipeptones, or from fermentations and putrefaction of the intestinal contents producing various toxins and ptomains.

Meanwhile the study of the functions of the liver has made great advances; in addition to the biliary and glycogenic functions, the formation of urea, of uric acid, the elaboration of fats, the researches of Bouchard have shown that the hepatic cell fixes many mineral poisons and arrests and modifies most alkaloids, ptomains and bacterial toxins.

Again, in the case of the alcoholic cirrhoses it was formerly taken for granted that, cirrhosis having occurred, there was nothing to be done but to remove the ascitic fluid when necessary and otherwise to make the patient as comfortable as possible. Now we know, from a better, though still imperfect knowledge of the disease, that in its earlier stages, at least, much may be done toward a relative cure. The adult cicatricial connective tissue cannot indeed be removed, but, as Hanot expressed it, "While it is the presence of this connective tissue that confirms the diagnosis, it is the condition of the hepatic cell that indicates the prognosis." From these views as to the etiology of the alcoholic cirrhoses it is evident that the earlier the treatment is instituted the greater will be the chances of success; therefore the question of early diagnosis is of paramount importance. It is often said that cirrhotics come to the physician when it is too late to do much for them; this may be true of hospital patients. But these same patients have been seen before; they have been seen on the occasion of some trivial gastro-intestinal disturbance or acute alcoholism, etc.

Of 995 men whom I have examined in Dr. Dow's rooms at the Vanderbilt Clinic, 32 had large livers with clear alcoholic history. This number does *not* include those livers enlarged from active or passive congestion nor from tuberculosis or malaria.

There was one solitary case of classic atrophic cirrhosis of Laennec. Of the 32 cases, two only were advanced cases of hypertrophic alcoholic cirrhosis; 16 presented symptoms that would lead to the investigation of the liver, mostly gastro-intestinal symptoms of alcoholism, and 14 came for various pains and aches having no relation to that organ. If these cases with clear alcoholic histories, and after the elimination mentioned, were not cases of alcoholic hypertrophic cirrhosis in the *early* stage, what could they have been?

The indications for the treatment are as clear and logical as they can be. Since alcohol is the chief agent in the production of those conditions of the digestive tract necessary to the development of cirrhosis, it must be entirely suppressed. Since the gastro-intestinal epithelium is more or less injured, a diet must be given which will cause least irritation and be as little toxic as possible. This diet is milk and all authors agree that, to be effective, it must be exclusive.

Milk is a complete food which is easily digested and easily absorbed, and, as was shown some years ago by Gilbert and Domenici, is of

[1] Read before the Academy of Medicine, Dec. 17, 1901.

powerful assistance in diminishing intestinal sepsis, for, after five days of absolute milk diet these authors found that the number of microbes contained in the feces was 70 times smaller than before its use. This is at first surprising, since milk is an excellent culture-medium, especially for the colon bacillus. The reasons they ascribe for the fact are multiple: (1) The facile digestibility of milk; (2) the almost complete absorption; (3) the feeble nutritive power of the residue; (4) the chemical reactions occurring during its stay in the stomach. The quantity to be taken should be from three to four liters daily; more than this may cause stasis and fermentation; less would result in emaciation and loss of strength. The patient may take a half liter every three and a half hours or 250 grams every two hours; he should begin by taking one liter a day and increase a half liter each day, for it is rare that the patient can take the three liters at the start. Some patients enjoy the benefit of this milk diet for a short time only, and then develop such a dislike for it that they cannot bear the sight of it. This disgust is often induced by the fermentation of some of the milk that remains in the mouth and may be prevented by washing the mouth with Vichy after each one of the meals.

The diet should be continued until the gastro-intestinal symptoms and the congestion of the liver that are frequently present at the beginning of treatment have subsided. In early and simple cases a week or two may be sufficient; in more advanced cases it should be continued for from two to four months. In any case, it is gradually relaxed in favor of eggs, vegetables, etc., meat being returned to last of all. At the beginning of treatment, to clear the intestine of its toxic contents and at the same time to aid in reducing the congestion of the liver, a purgative is given and later mild laxatives at intervals. It is unnecessary to add that the patient should take advantage of rest, open air, moderate hydrotherapy, and lead as careful a life as his financial situation and occupation will permit.

In the moderate cases of cirrhosis before ascites these hygienic measures may be sufficient. Then we must take into account the process of the regeneration of the hepatic cells. This subject was first broached by Tizzoni in 1883, by Canalis in 1886 on the subject of the healing of wounds of the liver. In 1891 Ponfick and Von Meister of Berlin demonstrated the regeneration after the removal of one-quarter and even one-half of the liver in rabbits. It has been demonstrated in man, notably in a case of alcoholic hypertrophic cirrhosis of Dujardin-Beaumetz of Paris, in which the patient, after having been relatively cured of his cirrhosis for over two years, died in forty-eight hours of an acute lobar pneumonia; and, again, by Hanot in a case of biliary hypertrophic cirrhosis in which there were found many normal cells, others hypertrophied, others in full karyokinesis. It is also supported by clinical evidence, for Surmont finds a diminution of toxicity of the urine in five cases of hypertrophic cirrhosis examined, while the toxicity is increased in cases of atrophic cirrhosis in which the glandular element is almost totally destroyed.

When ascites develops, it is all important to differentiate between the atrophic and the hypertrophic forms of alcoholic cirrhosis. In the atrophic variety there is menace at once from the circulatory obstruction and from the glandular destruction. Hale White points out that the average duration of life after the appearance of ascites is eight weeks. Nevertheless, the treatment should be pursued on the same lines as previously stated, being supplemented by paracentesis and the judicious use of purgatives and diuretics, for the average does not speak for the individual case. In a recent thesis Willemin mentions sixteen cases of atrophic cirrhosis that were improved for periods varying from several months to several years.

Simply to mention the fact: Spillman has tried hepatic opotherapy in five cases of atrophic cirrhosis with encouraging results, for the treatment caused an increase in the amount of urine with parallel increase in urea, phosphoric acid, and an absence of albumin and urobilin. The same treatment had no influence on two cases of Hanot's biliary hypertrophic cirrhosis.

The general treatment is again the same in hypertrophic cirrhosis after the development of ascites. Its success, as H. Campbell Thomson indicates in a paper that has been referred to here, will depend largely on the nature of the ascites. If the accumulation of fluid is due to the mechanical obstruction in the portal system, it indicates an advanced stage of cirrhosis and frequent tappings will probably only precipitate the end. Such a fluid is pale, non-fibrinous, contains but little albumin and but few cells, and leaves a solid residue of about 2 per cent.

If the ascites be due mostly to the coexistence of a perihepatitis and chronic peritonitis, complete rest, together with the milk diet and removal of the fluid, may do much for the patient. This ascitic fluid is fibrinous, albuminous, rich in blood-cells and contains a residue of about 4 per cent.

Our knowledge of the intimate causation of ascites is very meager and such divisions are apt to be too schematic, for the same irritating sclerogenous cause is at work both on the portal system and on the finer vessels of the peritoneum. However this be, over two-thirds of the reported cases of relative cure of cirrhosis with ascites are of the hypertrophic variety. Many of them read like the following case mentioned by Chauffard in an article on the "Clinical Forms of Cirrhosis," read at the Congress of Moscow.

"The patient, a chronic alcoholic of many years' standing, entered the hospital in January with a well-marked hypertrophic cirrhosis and considerable ascites. From January to May he was tapped five times, 54 liters of fluid being removed. His general condition was bad with marked emaciation. At the end of May the ascites ceased and did not reappear. The patient

soon returned to ordinary diet, gained 13 kilos in weight and became quite as strong and able as before his illness. For over a year after this and up to the time of writing the patient had remained quite well, although some alimentary glycosuria showed that the liver had not recovered its functional integrity."

I have omitted symptomatic treatment and also the surgical side of the subject in the above considerations on the alcoholic cirrhoses. The first is, as Musser says, common property; the second is in itself a large subject.

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## ON THE DIAGNOSIS OF CIRRHOSIS OF THE LIVER.[1]

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THE diagnosis of well-defined cirrhosis of the liver, the terminal condition, is usually a simple matter. Whether it be the atrophic form of Laennec or the hypertrophic form of Hanot, the symptom-complex in most of the cases is characteristic. In the former the pinched face with its distended venules and muddy or subicteroid hue—*facies hepatica*, the spare chest and thin arms, the distended belly with its conspicuous superficial veins and the diminished area of liver dulness, leave no doubt of the nature of the malady. In the latter the jaundice, the fairly well-preserved nutrition, the big liver without ascites, and occasional irregular fever, render the diagnosis equally clear. The two conditions are clinically distinct because they are the manifestations of essentially different pathological lesions. The one thing that these lesions have in common is an overgrowth of the interstitial connective tissue of the liver. It might be said that they have nothing in common clinically save that they are diseases of the liver. Yet they are described respectively as the atrophic form and the hypertrophic form of the same affection, hepatic cirrhosis. It is of interest to investigate the etymological significance of this unfortunate word "cirrhosis," originally selected by Laennec to describe an anatomical peculiarity of the contracted liver far from constant, and subsequently applied to changes in other viscera attended by an overgrowth of connective tissue, so that there have been those who have spoken of cirrhosis of the kidney, cirrhosis of the lungs and the like. The word is derived from the Greek κιρρος, tawny or orange-yellow, the color of the liver substance in some of the cases. It has nothing whatever to do, save by a remote and misleading association, with the sclerotic changes due to hyperplasia of connective tissue stroma.

Vaughn in a recent study of the subject[1] concludes that so-called atrophic and hypertrophic cirrhosis are not different forms of the same disease but wholly different diseases. He states that the former is known as atrophic cirrhosis because from its earliest possible recognition the liver is less than normal in size; while the hypertrophic is known as such because at every stage of the disease the liver is larger than normal; that the atrophic is known as venous cirrhosis because of the early and constant involvement of the intrahepatic branches of the portal vein, the hypertrophic as biliary cirrhosis because of the early appearance and constancy of icterus; that in atrophic cirrhosis the primary destructive changes are in the hepatic cells, while in hypertrophic cirrhosis the epithelium of the gall-ducts is the site of the primary involvement; that the former might be known as toxic, the latter as infective cirrhosis. These are practically the views of most of the later systematic writers upon the subject, and in particular Quincke, in Nothnagel, and Semmola and Gioffredi in the Twentieth Century Practice.

This clear-cut classification, while in some respects convenient and while it provides categories for well-marked cases of widely different morbid conditions, by no means meets the requirements of all the cases and does not appear to be wholly justified upon etiological, anatomical or clinical grounds. There are cases of atrophic cirrhosis in the causation of which alcohol plays no part, and cases of hypertrophic cirrhosis in hard drinkers. My clinical experience leads me to believe that alcohol is a very common cause of this form of cirrhosis.

Cases of cirrhosis of the liver without jaundice and with the evidences of a high degree of portal obstruction in which the liver is normal in size or slightly enlarged are by no means rare. In addition to these there is the fatty cirrhosis common in beer-drinkers. There is a large group of cases in which the symptoms are neither those of the atrophic nor the hypertrophic form. These are designated mixed forms and are thought to be due to the coexistence of the two forms, the toxic and the infective, in the same individual. On the other hand, Hawkins of St. Thomas's Hospital, in the article on cirrhosis of the liver in Allbutt's System, expresses the opinion that the terms "atrophic" and "hypertrophic" are scarcely worth retaining. "The former," he observes, "has lost much of its fitness now that statistics show that the hob-nailed liver, to which it was originally applied, is not necessarily small, but is often in-

[1] Read before the Section on Medicine of the New York Academy of Medicine, Nov. 21, 1901.

[1] Journal Amer. Med. Assoc., Oct. 5, 1901.

creased both in size and weight," while "the phrase hypertrophic cirrhosis has become so complicated by the postulate of a biliary cirrhosis that its significance is vague and uncertain." Hawkins does not recognize a vascular or toxic form corresponding to the atrophic form of writers (Laennec's cirrhosis) and a biliary or infectious form (Hanot's cirrhosis), but states that "two forms of cirrhosis of the liver are induced by the excessive use of alcohol." These two forms are separated both in their morbid anatomy and in their clinical features. In the first, which is by far the more common, the newly-developed fibrous tissue is "multilobular," that is, it tends to surround large groups of hepatic lobules. This form is commonly associated with ascites but seldom with jaundice. In the second and less common form of *alcoholic cirrhosis* the new tissue is mostly developed around single lobules and the condition is properly described as "unilobular." There is little tendency to ascites, while jaundice is common.

In this connection may be mentioned Flexner's researches in regard to the new tissue in cirrhosis of the liver.[1] He found both the white fibrous tissue and the elastic tissue increased and the chief distinction between the histology of the atrophic and hypertrophic cirrhoses to depend upon the degree of extralobular growth and the freedom with which the lobules are invaded, and that "in hypertrophic cirrhosis there would appear to be less interlobular growth and an earlier and firmer intralobular growth."

The chief objection to the classification of the cirrhoses into atrophic, vascular, toxic, on the one hand, and hypertrophic, biliary, infective, on the other, is that it does not conform to the facts. An objection of minor importance is to be found in the failure to provide for the cardiac and syphilitic cirrhoses, cirrhosis due to pneumonoconiosis, that form arising from chronic obstruction of the bile-ducts, chronic perihepatitis—capsular cirrhosis—and other forms of minor importance.

The difficulties in the diagnosis of hepatic cirrhosis are not as in most other diseases accidental. They do not arise from the peculiarities of individual cases. They are essential and due to the fact that no definition can be framed that at once pathologically and clinically includes all the cases. This arises from Laennec's choice of a term descriptive of an inconstant phenomenon and without pathological significance. "Cirrhosis" is conspicuous among the nosological terms that hamper medicine and obstruct the progress of knowledge. If it could be erased from the list of diseases our conception of the various conditions to which it is applied would be greatly simplified. The one underlying lesion common to all of them is an overgrowth of the fibrous tissue of the liver. The term chronic interstitial hepatitis is at once descriptive of the anatomico-pathological condition and sufficiently comprehensive to include all the cases. Its more general use is to be desired.

[1] Trans. Assoc. of Amer. Physicians, Vol. XV., 1900.

The etiological relations of individual cases may be indicated by qualifying adjectives: (*a*) In general toxic, and in particular alcoholic, plumbic, gouty, diabetic, rachitic and the like. We must include here forms of interstitial hepatitis due to chronic phosphorus-poisoning and the abuse of condiments. The assumption that intestinal auto-intoxication gives rise to interstitial hepatitis requires confirmation. (*b*) In general infectious; in particular the specific febrile infections are occasionally followed by chronic interstitial hepatitis. Malaria produces similar changes and syphilis gives rise to three well-characterized forms, namely, diffuse syphilitic hepatitis, commonly congenital, gummata which undergo fibroid transformation, and an extensive perihepatitis with increase in connective tissue of the portal canals. (*c*) Mechanical irritation. The long-continued exposure to an atmosphere laden with dust-particles such as produce pneumonoconiosis, whether these be mineral or metallic, may also give rise to an inflammatory process in the connective tissue of the liver. (*d*) Congestive; the chronic hyperemia of the blood-vessels occurring in heart disease gives rise to an interstitial hepatitis—the cardiac liver. (*e*) Obstructive, the result of chronic obstruction in the bile-ducts.

Clinically not all forms of interstitial hepatitis can be recognized. The symptoms are often vague and referable to other organs, especially those of the gastro-intestinal tract. In many of the cases the condition during life can only be suspected, the morbid phenomena being those of the primary disorder. Direct physical signs are available for diagnosis only when there are definite changes in the size or contour of the liver. Hence, the cases of chronic interstitial hepatitis, whatever its course, must be arranged in three groups according as the liver is found upon physical exploration to be (*a*) of about the normal size, (*b*) atrophic, and (*c*) hypertrophic.

With the histological changes the diagnostician to whom the problem presents itself *intra vitam* has nothing to do.

*a.* Since there are no characteristic symptoms in many cases of chronic interstitial hepatitis, and since in many of the cases the liver remains of normal size throughout and is in all of normal size until the disease has made some progress, it follows that the diagnosis is impossible in a considerable proportion of the cases and in the earlier stages of all cases. The most that can be done is to assume that certain etiological factors, as alcoholism, malaria, valvular disease of the heart with failing compensation being operative, and more or less well-pronounced gastrohepatic symptoms present, the patient may have an interstitial hepatitis. The diagnosis under such circumstances must be purely an anatomical one, and this is frequently the case in the fatty form of interstitial hepatitis in which symptoms directly referable to the liver are often absent and not rarely in the multilobular form either with or without atrophy. In the lat-

ter instance the true nature of the malady may reveal itself in sudden copious hematemesis or in the peculiar toxemia caused by the entrance of portal blood which has not traversed the liver into the general circulation, to which Stockton has especially directed attention.[1]

When, however, there are decided changes in the size of the liver the state of affairs is wholly different. The interstitial hepatitis reveals itself not only in physical signs, but also in symptoms of significance.

*b.* The liver is diminished in size. A high degree of atrophy may occur provided the collateral circulation has been established without the development of ascites or other symptoms which attract the attention of the patient to the liver. As a general rule, however, the malnutrition, the enlargement of the spleen, the distended superficial abdominal veins and the increased girth caused by the ascites are diagnostic. It is of cardinal importance also to remember that all these phenomena can occur in an interstitial hepatitis in which the liver is not only atrophic but even somewhat enlarged. Under these circumstances jaundice is not usually present.

Adhesive pylephlebitis closely resembles the atrophic form of interstitial hepatitis. The etiological considerations and the rapidity with which the peritoneal effusion develops and reforms after tapping, as was shown in a case recently in my service in the Pennsylvania Hospital, are important in the differential diagnosis. It is said that thrombosis of the portal vein is followed by an atrophy of the liver, which renders the diagnosis difficult. In the cases that have come under my observation death has occurred in the course of a few weeks and the liver was of normal size.

*c.* The liver is increased in size. The hypertrophic form of chronic interstitial hepatitis—Hanot's disease—like the forms already considered, may present insuperable difficulties in diagnosis in its early stages. The liver may be as yet of normal size. The early icterus may resemble that of catarrhal jaundice—a resemblance heightened by its fluctuation or temporary disappearance and by the occurrence of fever. The recurrence or persistence of the jaundice, its intensity and the presence of bile in the stools are of diagnostic importance. When the disease is established the uniform enlargement of the liver, the splenic tumor, the deep and persistent jaundice and the occasional attacks of fever are diagnostic. The fever is of subcontinuous or remittent type and extends over periods of days or weeks. Chills and sweating are not common, as in the fever of impacted gall-stone—Charcot's or true hepatic fever.

The diagnosis of hepatic capsulitis—the capsular cirrhosis of authors—is usually attended by insuperable difficulties. The symptoms are those of the atrophic form of chronic interstitial nephritis. Jaundice is not usually present. The kidneys are granular. This condition may be associated with perisplenitis and proliferative peritonitis.

In conclusion it may be affirmed that:

1. The term cirrhosis is an unfortunate one. It has been applied to conditions wholly unlike etiologically, anatomically and clinically, which have, however, in common an overgrowth of the connective tissue of the liver.

2. The term chronic interstitial hepatitis is to be preferred.

3. Alcohol is by far the most common cause of interstitial hepatitis alike in the cases in which the liver is of normal size or slightly enlarged, in the atrophic form and in the hypertrophic form.

4. The symptoms of this condition are in many cases ill-defined and not rarely the liver is not changed in size or contour. The clinical diagnosis in a large proportion of the cases is therefore impossible.

5. In the presence of definite symptoms and of the signs of enlargement or diminution of the liver, that is to say, in terminal conditions, the diagnosis is commonly a simple matter.

[1] Jour. Amer. Med. Assoc., Sept. 28, 1901.

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## CIRRHOSIS OF THE LIVER AS SEEN IN CHILDREN.

BY W. C. HOLLOPETER, A.M., M.D.,
OF PHILADELPHIA.

IN presenting this very brief paper on cirrhosis as found in young life, I will preface my remarks with the statement that I shall limit myself entirely to answering the question in the affirmative, with some attention to its etiology and diagnosis. The subject is usually dismissed with a comparatively vague article in the text-books by American authors, or a compilation seems to be the order of their researches. English writers seem to have had more experience, evidently by reason of a long line of heredity and unfavorable environments, and they probably give about as clear an outline of the subject as is to be found in literature.

Cirrhosis has its analogy arteriosclerosis in early life and with this latter affection might be regarded as a rare condition. Liver diseases are, however, usually the results of secondary troubles and, as such, they require the element of time to produce them. Unfortunately adult age is reached oftentimes before the secondary results are discovered. Sclerotic blood-vessels are no longer an unusual feature in adolescence, and portal fibrosis is not so unusual as has been clinically demonstrated, especially when we consider heredity, environment and the neglect of personal hygiene among parents as well as among the children. The embarrassing point in all liver trouble in young life is that we so frequently forget the relative over-size of the organ, and to this fact is due the frequent error of regarding the organ as pathological when it is, in reality, normal, or, at best, functionally distended above its usual volume. Thus, septic jaundice frequently enlarges the organ, owing to pressure and enlargement in the bile-ducts by

swelling of the connective tissue around the branches of the portal vein in the liver. This form of enlargement is associated fortunately with a temperature and symptoms of apparent invasion which makes the diagnosis quite easy.

The progress of this form of trouble is somewhat slow, with many of the features of fibrosis, and it has been frequently so diagnosticated.

Cirrhosis of the liver in children and inflammation involving the fibrous tissues, capillaries, lymphatics or bile-ducts separately or combined, is no longer regarded as a rare disease, now that we have so vast a field for the collection of data; any one who has enjoyed a number of years of hospital experience, seeing many children, can so testify. Ten years ago it was taught that cirrhosis was one of the rarest diseases among children. Drs. West, Birch-Hirschfield and Henock call it absolutely rare. Dr. Palmer Howard, however, has collected more or less complete accounts of 63 cases occurring in children, and Dr. Marcus P. Tatfield, 93, reported during the past 50 years, which makes 156 cases, all told; so we are compelled to agree with Eustace Smith, a pioneer of the study of this disease in children, in the statement that there is reason to believe that hepatic cirrhosis is less uncommon with children than is generally taught.

The pathological division and subdivision of liver diseases have been confusing to clinicians and we will dismiss this portion briefly, confining ourselves strictly to the clinical picture of cirrhosis as seen in early life.

Interstitial hepatitis in infants is most probably syphilitic, of course inherited. I have never seen an exception to this rule. The stigmata in the inheritance is usually found on close investigation. In older children the disease may occur apparently without any other tissues being involved; yet it is the outgrowth of some systemic disorder. Alcoholism, the most frequent single cause, according to Dr. Dawson Williams, accounts for about one-sixth of all the cases in children. While this agent is so very destructive to adult livers, it cannot be so readily proven in childhood. It is not quite clear that "the sins of the fathers are visited upon the children." It is true, however, that among the users of alcohol, the young are indifferently cared for: irregular feeding, poor personal hygiene, making children cross and unhappy, necessarily to be quieted by gin, brandy and the various alcoholic anodynes to secure temporary comfort from the results of improper and irrational feeding. The amount of aromatic wines, cordials, essence of pepsin, gin, etc., systematically administered to infants by shiftless and ignorant parents to offset care and attention can never be known, except as we see the unfortunate results in the hospitals and dispensaries of our large cities. This factor in the production of cirrhotic livers in young children has never been sufficiently recognized and is no doubt the beginning of many of the wretched lives seen in dispensary and hospital work. It is not only found in the very poor, but in the underfed babies of the rich that are entrusted to careless or indifferent nurse-maids who are surreptitiously administering to their young charges gins and aromatic anodynes sufficient to secure the child's quietude, in order that their personal comfort may be attained. This is an evil that is rapidly growing, and needs wide recognition for its suppression.

General tuberculosis is sometimes accompanied by fibrosis of the liver, yet I am not quite sure to what degree; about one-third of the cases of hepatitis follow in the wake of acute infectious diseases, typhoid fever, measles and scarlet fever. I have seen one case which I thought was the sequel of whooping-cough. Dr. West mentions a box of six and Dr. Wettergren a boy of five suffering from interstitial hepatitis, both of whom were in the habit of drinking largely of coffee. Most of the cases of fibrosis of the liver in children are hypertrophic, except the alcoholic in the last stages. The organ is large, in color gray or orange-yellow, and finely granular. The large size of the liver is due to the fact that the hepatic cells do not atrophy nor does the fibrous growth retract. The symptoms of the two forms of hepatitis—the atrophic and hypertrophic—by reason of their different pathological conditions in the earlier stages cannot be clinically discriminated, and it is well for us to dismiss at once any efforts to do so that we may gain a proper conception of the trouble. The early picture of this condition is blurred by the ever-present evidence of the symptoms of indigestion, and this especially is impressive, as the disorder occurs among a class where personal hygiene is unknown or unrecognized. We will always find evidence of interference of nutrition chiefly affecting the portal circulation in hypertrophic fibrosis and the circulation of the biliary vessels in atrophic hepatitis; yet this characteristic cannot be seen early enough in many cases to be of especial value. The child will be a sufferer from the vague symptoms of indigestion for a long time, a veil that covers many errors. Restlessness at night for many months perhaps, flatulence, occasional vomiting, constipation alternating with diarrhea, evidence of dyspeptic diarrhea, with feverishness will be noticed; sallow skin, earthy in places, harsh and dry, elevated hair-follicles, with a putty-colored skin; soon come dark circles under the eye and loss of flesh, especially noticeable in the arms and legs. After this train of symptoms has existed for some months, improvement, alternating with many relapses, takes place. On closer scrutiny you will find the abdomen larger than usual and on palpation fluid will ofttimes be discovered. The first pronounced characteristic symptoms are, therefore, ascites, with wasted, waxy limbs, some edema ofttimes of the feet. The stigma of fine, dilated veins on cheek or nose or in the ear will ofttimes be a finger-board to our diagnosis. Larger veins are found on the abdomen, forming four or five large branches running

down from the xiphoid cartilage to the groin. These veins communicate above with the epigastric and internal mammary and below with the iliac and saphenous veins. The course of the blood is, therefore, from above downward. The dilatation may commence later than ascites and may continue long after it has ceased. Venous embarrassment is a certain evidence of portal obstruction. The stigma found on the face and ear and nose ofttimes is, of course, inherited, but it is also a fairly certain guide to the pathological changes going on within the child. The enlarged liver may be palpated, unless dropsy is extreme, and the enlarged spleen is better felt with the child on all-fours. The spleen is almost invariably disturbed in liver disorders and will be found to be somewhat beyond the normal size. The nose bleeds easily and occasionally hemorrhoids form or slight bleeding from the bowels is an associated symptom.

With this outline of cirrhotic liver in young children, I beg to append the brief histories of two that have been very recently under my personal observation. The one of alcoholic fibrosis is still under observation. The case is briefly, as follows:

*Case I.*—E., aged nine years; a healthy child, born of healthy parentage; was breast-fed up to six months of age, when the bottle-feeding was commenced. The grandfather is a sufferer from cirrhosis. The child being an only one received unusually careful attention from well-to-do patients, whose affection was so intense that it was ofttimes misplaced. Every whim was gratified and, unfortunately for the little patient, the grandparents' indulgence exceeded their wisdom; sweetmeats and various tastes of cordials were permitted from time to time, and at the beginning of the second year the first attack of catarrhal jaundice was ushered in, which continued more or less as an element of trouble for several months. This condition of gastric irritation was repeated from time to time in the last two or three years and is at present regarded as the almost constant feature of the child's trouble. The slightest irregularity in its dietary is bound to awaken some gastric distress, and if this is not promptly met the child drifts into a form of catarrhal jaundice with considerable irritation and wasting. These attacks have continued throughout the child's life up to the present time. We now find a liver considerably enlarged, with some ascites. The line of venous marking is very beautifully illustrated. The dilatation of the abdominal veins is as marked as in an advanced case of ovarian dropsy or chronic cirrhosis in the adult, with marking of the dilated veins in nose and face. The limbs are considerably wasted and the child's conjunctiva is muddy and slightly jaundiced; the tongue is pasty and the stomach rebellious. On palpation I found the liver down to the level of the umbilicus and quite large and tender. I have no doubt that we have in this case one of those chronic forms of hepatitis due to irregular and constant feeding, plus a great deal of the element of heredity that conspires to make this one of the earlier types of cirrhosis as found in adolescence. The symptoms are gradually but surely growing worse and associated with that physical decline is a striking change in the child's disposition; from a bright, lively, vivacious child she has become very sullen, given to fits of anger and sulking; and has lost, to a great extent, her desire for things childish and playful.

*Case II.*—Annie S., baby, admitted to my wards of the Philadelphia Hospital, December 1st, with the history of one week's illness which began with swelling of the legs and abdomen. This has since disappeared. She was an anemic, poorly-nourished baby of seven weeks, and weighed 8 pounds and 2 ounces. The face was covered with an eruption which was at first vesicular, then scaly. The hands, arms and legs were desquamating large areas of skin; the chest was covered with an eruption resembling urticaria, while the skin on the feet and legs was erythematous. The abdominal veins were large and distended, showing engorged portal circulation. The liver extended from the sixth interspace to three finger-breadths below the costal margin and from the ensiform cartilage to a line drawn to the angle of the scapula. The spleen was easily palpable, enlarged about twice its normal size. The heart-sounds were clear, regular, distinct. The blood examination microscopically showed blood dyscrasia marked. She nursed well, but in small quantities; temperature was hectic, varying from one to two degrees; stools were green. On the fourth day after admission the temperature was higher in the morning than in the evening; for the three days 98° to 103.6° F. No rigors were noticeable, nor did the child perspire. The child's face was then one raw surface, the superficial skin having peeled off. The skin of the buttocks and at certain places over the arms, legs, back, abdomen and chest had become vesicular, peeled off, leaving a raw, irritated surface. The child did not suffer much; cried only when dressed or handled; liver and spleen remained enlarged. On the sixth day the blisters had extended to and covered the greater part of the groin, buttocks and legs. The face was literally covered with blebs and was rather raw as the result of the bullæ bursting. Breath-sounds harsh, respiration accelerated, child did not sleep well, but had apparently no pain; seemed much weaker at night; temperature 104° F. Child died on the seventh day after admission.

*Postmortem.*—On inspection, liver was found to be 15 cm. by 10 cm. by 4½ cm. On the upper part of the anterior surface in the median line of the liver was a white patch, densely opaque in the center and shading out to the surrounding tissue. On incision, the opacity was found to extend inward about 2 mm.; probably a thickened capsule, otherwise no pathologic lesions were found. Microscopically fibrous changes were found in the ducts and the condition of true

cirrhotic change was found in the vessels and in the connective tissue surrounding the hepatic cells. The spleen was 8½ cm. by 4½ cm. by 2½ cm., enlarged 3 times its normal size. Capsule thickened. On section, no special pathological lesion was found. Liver weighed 230 grams; spleen, 45 grams. This was evidently a case of syphilitic fibrosis of the liver.

*Recapitulation.*—Briefly recapitulating, we may infer that cirrhosis of the liver in infants and adolescents is not so infrequent as clinicians infer, that cirrhosis in children can generally be relegated either to syphilitic or alcoholic types, with a very small percentage as sequelæ of the acute infectious diseases.

As a rule, the premonitory symptoms are disguised by a long train of gastro-intestinal irritation that renders an early diagnosis uncertain.

## INTESTINAL OBSTRUCTION DUE TO GALL-STONES.[1]

BY LEWIS STEPHEN PILCHER, M.D.,
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THAT a gall-stone, after having entered the intestinal tract, should by reason of its size become a cause of serious obstruction to the fecal current is a proposition that naturally might be greeted with skepticism, especially at this day when surgeons are frequently placing in the jejunum so large a foreign body as a medium-sized Murphy button with the confident expectation that after a few days it will appear at the anus, an expectation that is rarely disappointed. It may be remembered that as recently as 1898 there was reported to this Society by Dr. Elsner (Transactions Med. Soc. State of N. Y., 1898, p. 282) the case of a woman who passed by the anus two enormous gall-stones, the first one five and one-half inches in circumference and three inches in length, and the second one three inches in circumference and two inches long; an interval of about one year occurring between the appearance of the stones.

That so fortunate an ultimate result can not always be depended on must nevertheless be admitted. The statistics of Leichtenstern, given in Vol. VII. of Ziemssen's Cyclopædia of the Practice of Medicine, collected previous to 1875, are familiar to the present generation of readers. Among 1,541 instances of obstruction of the bowels from all causes collected by that writer, there were 41 which were due to gall-stones.

In the later statistics of Gibson (*Annals of Surgery*, 1900, XXXII., 486) such obstructions appear in still greater proportion. Among 1,000 operations for acute intestinal obstruction, compiled by that writer from the literature of recent years, in 40 instances the obstruction was due to the impaction of a large gall-stone within the bowel. In 1892 Kirmissen and Rochard (*Archives générales de Médecine*, February, 1892) were able to collect from all sources 105 cases of intestinal obstruction by gall-stones.

In my experience I have met with this condition but once. The account of this case is as follows: In August, 1898, a large well-nourished woman, about sixty years of age, was admitted to the Methodist Episcopal Hospital with acute intestinal obstruction. The symptoms had been developing with increasing intensity for two days. Previous to their inception she had supposed herself in good health; there had been no jaundice, nor other symptom to call attention to any lesion of the gall-passages. The attack had begun with pain in the umbilical region, followed by vomiting, and was regarded at first as a transient fit of indigestion. The vomiting, however, persisted and after twenty-four hours became fecal in character; the abdomen became tumid; the bowels were constipated. This was her condition when brought to the hospital.

Upon admission her general condition was good; the early appearance of the fecal vomiting suggested an obstruction in the nearer portion of the small intestine and the absence of shock and severe pain tended to eliminate the idea of any internal strangulation. As soon as the proper preparations could be made I opened the abdomen by a five-inch longitudinal incision in the linea alba, the incision beginning above the umbilicus and extending below it. Distended coils of small intestine presented in the wound. The systematic withdrawal of these through the wound upon the outside of the abdomen was begun, but after a very short time was arrested by the apparent adhesion of the loop that was being drawn upon in the depth of the abdominal cavity in the duodeno-jejunal fossa. The finger following down to the point of adhesion felt a hard mass in the intestine at the adherent point; the adhesions, which were recent and soft and not extensive, were readily separated and the loop containing the foreign body was brought to the surface. After the usual preparations for incising the bowel an opening was made into it at a little distance away through healthy tissue, through which the foreign body was removed. The intestinal incision was then sutured, the exposed loop was carefully cleansed and replaced within the abdominal cavity and the parietal incision was sutured except at its lower angle where an iodoform-gauze mesh was placed as a temporary drain extending down to the site of the intestinal suture. An uncomplicated recovery followed. I have frequently seen this woman since. She is in robust health.

The foreign body proved to be a large gall-stone, nearly spherical in shape, with an average diameter of about one inch and a circumference of three inches. Its size is not so great but one would suppose that it would readily have passed along the whole extent of the alimentary canal without producing any serious obstruction. The conditions which were revealed by the operation show that other causes than the mere physical blockade of the lumen of the intestine

[1] Read before the Medical Society of the State of New York, Oct. 15, 1901.

by the mass of the calculus contributed very materially to the final catastrophe. I would trace the sequence of these secondary causes in this order: The weight of the calculus was sufficient to prevent the free movements of the loop in which it was held; the mechanical irritation due to its prolonged retention at the most dependent point of this loop produced a circumscribed congestion of the underlying bowel-wall, favoring the transmission of infection and a resulting localized peritonitis which glued the loop, sharply bent upon itself into the depth of the duodeno-jejunal fossa, and thus added the condition of angulation of the bowel to whatever of obstruction the calculus had previously produced. The combination of the two conditions produced the complete obstruction, with the symptoms that led to operation.

It has occurred to me that this case is probably not exceptional, but is fairly typical of what must occur in many of the cases of intestinal obstruction from gall-stones. The conclusion seems to be a reasonable one that in such cases the final determining factor in the obstruction is not so much the bulk of the gall-stone as it is the secondary development of conditions at some point of the bowel-wall in the downward course of the calculus which lessen the contractile propulsive power of the bowel-wall. Such local paresis readily favors angulation and the progressive development of the symptoms of complete obstruction rapidly follows.

These stones enter the intestinal canal presumably by ulcerative perforation through the adherent walls of the gall-bladder and the duodenum.

In the literature of the subject it will be found that great diversity of opinion has existed as to the character and intensity of the symptoms which have attended the earlier evolution of these cases up to the time of the final attack of obstruction. That, as in the case of my patient, there should have been entire absence of any notable abdominal symptoms has not been unusual. Rarely do symptoms of obstruction arise at once upon the entrance of the stone into the cavity of the duodenum. Not until the lower portion of the small intestine is reached does the obstruction declare itself, as a rule. It is fair to ask why the stone should be arrested here if it has not been too large to pass along the higher portions of the intestinal tract. The dilatability of the intestine, the propulsive power of its muscular wall is not any less here than in the part already passed through. The thinner and less vascular coat of the ileum and the extreme mobility of its numerous coils render it, however, more prone to what I may call decubital irritation from the presence within it of a foreign body like a large gall-stone and the development of circumscribed peritonitis, with its attendant paresis and probable adhesions and possible acute angulation. I am inclined to assign therefore to "decubital irritation" the most important rôle in the causation of intestinal obstruction by gall-stones. I emphasize it in the present communication because its general presence and influence in the earlier course of these cases have not hitherto received that notice by writers upon this subject which they deserve, although the frequency with which necrosis of the intestinal wall and circumscribed peritonitis have been found in cases which have come late to operation, has been noted by observers.

The diagnosis of gall-stone as the cause of an intestinal obstruction must often be obscure and uncertain. This will necessarily be the case in those not infrequent instances in which the symptoms of obstruction declare themselves suddenly and without previous signs of a cholelithiasis. Most of the symptoms that attend the condition of gall-stone intestinal obstruction are at best suggestive rather than positive. The greater number of these cases occur in women over fifty years of age. The obstruction is in the small intestine and retroperistalsis is early induced, provoking copious vomiting that soon becomes fecal; yet without the signs of shock and early collapse that mark an internal strangulation. For the same reason excessive tympany does not develop. The obstruction may be incomplete and a chronicity or intermittence of the symptoms may mark the case. In a very considerable proportion of cases, over 50 per cent., according to Naunyn (*Klinik der Cholelithiasis*, Leipzig, 1892, p. 173), a spontaneous moving on of the blockading calculus is ultimately effected and recovery ensues without surgical interference.

All these symptoms, however, are quite as likely to be caused by an annular carcinoma and, with the exception of the intermittence or spontaneous relief of the symptoms, by internal hernias and constricting bands.

If in a given instance the physician could be positive that the case is one of gall-stone obstruction, he might be justified in adopting an expectant attitude. In the present state of intra-abdominal surgery, however, the onus of adopting such an attitude toward any case of intestinal obstruction has become a very serious one, since exploratory abdominal section *per se* has become established as a relatively safe procedure and since by such section alone can a positive diagnosis be made. The establishment of the diagnosis of the particular cause of any intestinal obstruction is, of course, in the line of scientific precision, and thoroughness and exactness of investigation to arrive at a conclusion are always to be employed before proceeding to the abdominal section, but it is not to be overlooked that this section is the most important means of diagnosis, while it at the same time opens the way for the application of the supreme means of relief.

Of the forty cases of operation for gall-stone obstruction gathered by Gibson twenty-one were fatal. The length of time that the symptoms of obstruction had existed and the general condition of the patient at the time she (three-fourths of the pa-

tients were women) was brought to the operating-table are unfortunately not given by Gibson for on these points must hinge considerations of the greatest importance. The tendency to death is generally by exhaustion and auto-intoxication; in some cases a general peritonitis develops and closes the case. Treves (Intestinal Obstruction, p. 329) gives the average duration of the final acute attack as seven days, the shortest period being four days, the longest fifteen days. It is obvious that if operative interference is to be attempted, the probabilities of success must steadily decrease with the lengthening of the time since the onset of the obstruction symptoms. The best results are only to be obtained by resorting to operation before the recuperative powers of the patient have become exhausted and while the local damage is still slight. As soon therefore as the symptoms of obstruction are positive, whether the presumption of a gall-stone as its cause is entertained or not, the surgeon is justified in opening the abdomen, first as a diagnostic —and secondly as a therapeutic procedure. The presumption that the cause of obstruction is a gall-stone should not induce the adoption of the policy of delay in the hope that the obstructing body would eventually pass, but such a presumption may rather stimulate to early operation, for it creates the expectation of encountering a condition, when once the abdomen is opened, which is readily and quickly amenable to simple surgical efforts.

Doubtless if this recommendation is followed some cases will be operated upon that would have recovered if they had been left alone; possibly some operative fatalities may also occur among these same cases; but the proportion of operative fatalities among patients unnecessarily operated upon will bear but an insignificant relation to the increased number of operative recoveries among patients who but for this early interference would have died as the result of gall-stone impaction.

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## PERCUSSION OF THE LOWER BORDER OF THE LIVER.

BY ALBERT ABRAMS, A.M., M.D.,
OF SAN FRANCISCO.

THE value of regional hepatic percussion needs no expatiation. No one however skilled in percussion can gainsay the insurmountable difficulties which beset the clinician in his attempts to demarcate an organ which is immersed in an atmosphere of tympanitic sound, and the edge of which does not exceed one centimeter in thickness. Take into consideration the facts that the contiguous viscera, stomach and intestines, vary in their degree of inflation and in the character of their contents, and we have additional factors which modify the accurarcy of our percussional results. Posture and the phases of respiration are likewise disturbing elements. A liver may be very much enlarged, yet percussion as ordinarily practised may give absolutely no evidence of enlargement, if examination is made in the recumbent posture. A good rule to follow is never to declare the liver to be enlarged unless it is palpable; but palpation may detect a liver which is dislocated though not necessarily enlarged; and, again, rigidity of the abdominal parietes may negative the value of palpation.

In my "Manual of Diagnosis" I have referred to two methods of determining the lower border of the liver. One method is that described by C. Verstraelen, which is based on the fact that the intensity of the heart tones is well preserved over the entire hepatic region; at the lower border of the liver, however, the tones are suddenly lost; and in this way the lower liver border is determined. The abdominal walls must be relaxed, otherwise they will conduct the heart tones. This method I consider imperfect, as it is never of value if the cardiac tones are weak. Another method which I advocated in the same book is as follows: The patient is placed in a position favoring the approximation of the liver to the abdominal walls. This position is the knee-elbow one, or, if this is impossible, the erect posture, the body being inclined forward. The edge of a large coin is then deeply embedded in the abdominal walls, and the free edge of the coin is percussed lightly and shifted gradually upward from the tympanitic area until dulness is elicited. If this dulness represents the liver border, then, in accordance with the fact that the liver undergoes respiratory dislocation, the line of dulness will be lower during inspiration and higher during the act of expiration. The essential object embodied in this method is to verify the correctness of the percussion by dislocation of the organ during respiration. The latter method is relatively inaccurate, as I have had occasion to observe by controlling the percussional results by palpation in numerous instances where the latter method was easy of attainment.

A simple maneuver for mapping out the lower liver border on the surface of the abdomen is as follows: The patient is instructed to incline his body backward as far as possible and, to relieve the tedium of the posture, the body is supported by means of the hands resting on the hips. If percussion, which must be light, is now attempted, the difficulty of determining the lower hepatic border is reduced to a minimum.

If we analyze the rationale of this maneuver we will find that it involves a simple law in physics, viz., that sound waves are best conducted by the medium in which they are produced. If the waves of sound are compelled to pass through media of different density, some of the waves will be lost by reflection and the sound becomes correspondingly enfeebled. Solid bodies conduct sound better than air. If percussion of the lower liver border is executed in the conventional manner, the percussion sound first passes through the relatively-dense abdominal musculature and then through the air-containing viscera before it reaches the liver. Theoretically at least, the percussion sound becomes enfeebled by the time it reaches the liver inasmuch as the high

pitch which reveals anything solid is dependent on the loudness of the percussion note, which in turn depends on the force exerted in percussion. We dare not employ a strong percussion sound in mapping out the lower hepatic border, for, by so doing, we set in vibration the air contained in the neighboring viscera and defeat the original object of our percussion, viz., the elicitation of a dull sound. In the posture suggested, we approximate the surface of the liver to the abdominal parietes, thus affording a like medium for the transmission of the percussion sound. When patients are compelled to assume a recumbent posture the same object may be achieved by directing them forcibly to contract the abdominal muscles during the time percussion is executed. The results by the latter maneuver, however, are less accurate, though relatively better than by the conventional method of percussion.

Percussion of the liver while the abdominal muscles are contracted is a valuable means of ascertaining sensitiveness of the liver. It is a better method than palpation, which only admits of testing the sensitiveness of the lower border of the liver. I am cognizant of the dictum of Frerichs, who directed attention to the fact that contraction of the abdominal muscles will frequently yield a dulness on percussion which is likely to be confounded with the dulness of the liver. This objection is to my mind purely theoretic. There is one condition, however, which demands consideration in percussion of the lower liver border and that is the presence of fecal concretions in the intestines contiguous to the liver border. The observation is undoubtedly correct that no one should rely on the results of liver percussion unless the bowels have been previously cleared by free purgation. This teaching applies with all cogency to the entire abdomen. Experience has taught me the following simple method of determining the presence of fecal matter: If by palpation or percussion we suspect the existence of fecal stasis—massage of the suspected area for a few seconds will dissipate the dull percussion sound, which will then be supplanted by a tympanitic percussion tone. It is therefore imperative, before determining the lower border of the liver by the maneuver already suggested, to massage that region for several seconds.

There are two additional facts which deserve mention: First, the patient must be cautioned to take no inspiration before contracting the abdominal muscles, for by so doing the liver will be dislocated downward; second, in practising percussion, the finger receiving the percussion blow must be firmly embedded in the abdominal wall; otherwise, the blow will not be directly transmitted to the liver.

**Sir William MacCormac's Successor.**—Dr. F. W. Pavy, F.R.S., has been elected to the office of president of the National Committee for Great Britain and Ireland of the Fourteenth International Congress of Medicine, to fill the place of the late Sir William MacCormac, who had enjoyed this honor for many years.

## TUMORS OF THE LIVER.[1]

BY GEORGE RYERSON FOWLER, M.D.,
OF NEW YORK.

NEOPLASMS of the liver occurring as primary growths are very uncommon. They may spring from the epithelial structure, adenomata and carcinomata representing this type, or from the connective tissue, as represented by fibromata, fibro-neuromata, and sarcomata. Secondary carcinoma follows a primary growth in the stomach in about 25 per cent. of the cases.

*Echinococcus Cysts.*—The embryo of the tenia echinococcus gains access to the various organs of the body by means of the chyle through the thoracic duct and vascular system. The liver is particularly predisposed to the parasitic development, the embryo gaining access through the portal vein, where it forms the most common tumor of the liver, with the exception of carcinoma.

In typical cases a soft, fluctuating and insensitive tumor is found in the region of the liver, which rises and falls with the movements of the diaphragm, providing there are no adhesions to the abdominal wall. The so-called hydatid thrill of Santorini is a peculiar vibration supposed to be caused by movements of separate cysts ("daughter cysts") within the firm capsule of connective tissue which encloses the cyst proper. It is elicited by striking the tumor with the finger-tips, the other hand being placed upon the tumor at a distance. It is not always present. Jaundice is not a common symptom, and is only present when compression of the bile-ducts occurs. The chief symptoms of echinococcus cyst are a feeling of weight in the region of the tumor, and, if the tumor is large, there is some interference with respiration, as well as digestive disturbances from pressure upon the stomach and intestines. These cysts may reach enormous proportions and rupture occur. The rupture of the cyst may take place in the stomach or intestine, thus leading to a spontaneous cure. Rupture into the blood- or lymph-vessels may take place, particularly into the vena cava, and prove immediately fatal. Rupture into the peritoneal cavity may cause fatal peritonitis. If the patient survives this accident, an extensive development of cysts follows. Rupture into the pleura, lung, pericardium or mediastinum, as well as accidental microbic infection, with resulting suppuration and sloughing of the sac, are events fraught with danger which occur in the clinical history of these cysts. Bile may enter the cyst and render it sterile by destroying the parasite, thus producing a spontaneous cure in time.

The diagnosis of echinococcus cyst of the liver may be determined by an exploratory puncture. A clear fluid, either neutral or alkaline in reaction, free from albumin and rich in sodium chloride, and containing succinic acid, is obtained. Microscopical examination sometimes

[1] Read before the Medical Society of the State of New York, Oct. 15, 1901.

reveals the knob-like heads, or scolices, and hooklets of the parasite in large quantities.

The treatment of echinococcus cyst of the liver is of an operative character, and consists in excision by partial hepatectomy, whenever feasible, by either the abdominal or transpleural route. R. S. Fowler operated at one sitting, carefully emptying the cyst by aspiration after exposing it, and then after isolation of the liver by large gauze pads, removing the cyst-wall and a thin slice of the adjacent liver substance by means of the thermocautery. Five cases operated upon by this method in my hospital services have all recovered promptly.

In large tumors with many adhesions this radical procedure may not be practicable, in which case the fibrous capsule may be sewn to the edges of the abdominal incision, and the operation completed by opening the sac at once, or the latter may be postponed for three or four days. The cyst-wall may be removed in part or entirely; it frequently sloughs away and may be removed piecemeal at subsequent dressings. In cases in which the cyst is too adherent for removal, final obliteration may be brought about by injections of diluted tincture of iodine (1 to 8). Aspiration of echinococcus cysts and injections of various solutions, or leaving a cannula *in situ* for permanent drainage, are not justifiable procedures.

*Simple or Non-Parasitic Cysts of the Liver.*—These are of very rare occurrence. Probably a majority of those reported have been sterile hydatid cysts. Those not belonging in this category probably have their origin in dilated lymph-vessels. An exploratory puncture will readily settle the differential diagnosis between echinococcus disease and simple serous cyst, the presence of albumin and the absence of hooklets constituting the characteristic features. The treatment consists of evacuation of the contents of the cyst after drawing the latter through an abdominal incision made over the more prominent portion of the tumor, and suturing the edges of the opening in the cyst to the margins of the abdominal wound, thus establishing permanent drainage. Large cysts that are free from adhesions may be to a large extent extirpated, any remaining portions being attached to the abdominal wall.

*Multilocular Cystic Disease.*—This is a condition similar to multilocular cystic disease of the kidneys, with which it has been found to be associated. It occurs almost exclusively in elderly persons, or those over sixty. It is of but slight surgical importance, save from the standpoint of differential diagnosis, since the involvement of the entire liver precludes operative interference. It is a very rare pathological condition. In almost all the recorded instances the diagnosis has been made postmortem.

*Cystic Adenomata of the Liver.*—These arise either from the epithelial cells of the liver or the intrahepatic bile channels. One or more cysts may be present. König and Schmidt have each recorded a successful case in which a cystic adenoma of the liver was removed by operation. To these I have to add a third, from my own experience, the tumor, the size of an English walnut, appearing prominently in the epigastrium. A median incision was made, the tumor exposed and removed, together with a portion of the surrounding liver substance, by means of the thermocautery. The patient, at the end of three years, has not suffered from a return of the growth.

*Dermoid Cysts of the Liver.*—As an isolated affection, these are unknown. In the case described by Hulke the dermoid tumors of the liver occurred in association with dermoid tumors of both ovaries. It would scarcely seem warranted to assert that the tumors of the liver were secondary to those of the ovaries. The discovery of a dermoid cyst of the liver in the course of a laparotomy, for it is probable that only in this way a diagnosis would be established, should be followed by a dissection of the entire tumor from the hepatic tissue. If this is found to be impracticable the same course may be pursued as recommended in large and adherent echinococcus cysts, namely, evacuation and suturing of the edges of the incision to the margins of the abdominal wound. Cases in which suppurative changes have taken place should be treated as abscesses of the liver.

*Angioma* of the liver occurs as a localized tumor of variable size situated beneath the capsule of Glisson, and consisting of diseased blood-vessels. The disease is of but slight surgical importance. Growths that are of congenital origin soon destroy the patient, while the acquired cases are innocent in character and do not demand treatment, although Eiselberg removed such a growth from the right lobe of the liver by means of the thermocautery.

*Fibromata* and *adenomata* of the liver are of interest surgically principally for the reason that growths of this kind are the foundation for primary sarcoma and carcinoma of the liver. The probability of this serves to emphasize the importance of definitely exploring and broadly extirpating any tumor of the liver springing from either the epithelial or connective tissue structure in as early a stage of its development as possible.

*Botyroid Liver*, so called from its resemblance to a bunch of grapes, is a condition which is the final result of a syphilitic hepatitis. The changes in the liver are permanent and possess no surgical interest.

*Accessory Lobes.*—Occasionally these may become sufficiently hypertrophied to be mistaken for new growths. Keen attributes such a case to Martin, of Birmingham, in which the growth was supposed to be a renal cyst until an abdominal section revealed its true character. The base of the lobe was ligated and the gall-bladder removed with the mass. Recovery followed.

*Syphilitic Gummata* may break down and find their way to the surface, thus simulating a neoplasm of the liver. These should not be made

the subjects of operative attacks, unless the administration of potassium iodide has failed to ameliorate whatever symptoms they may produce.

It is customary to consider *floating* or *movable liver* in connection with tumors of the liver. This condition is either congenital or acquired. In the latter event it is due to tight lacing, or to dragging upon the organ by an enlarged gall-bladder, or it may be secondary to large tumors. In lacing liver the constricted portion becomes movable. The congenital variety is usually associated with enteroptosis. The mobility depends upon the lengthening of the suspensory, lateral and coronary ligaments; in rare instances the latter are absent. It occurs much more frequently in women than in men. In extreme degrees of mobility there is more or less continuous distress and exacerbations of severe pain; jaundice may be present at times. Digestive disturbances are common. Examination discloses a movable tumor the size and shape of the liver and resonance in the hepatic region. In lacing liver the constricted lobes may be united by suture, as suggested by Billroth, followed by Hacker, Fecherning, and others. In a case of congenital origin which came under my care over two years ago, the patient then being twenty years of age, an excellent result was obtained and maintained by fixation to the diaphragm and the sheath of the right rectus muscle through the medium of the broad surfaces of the greatly lengthened suspensory ligament. Kangaroo tendon sutures were employed.

## MEDICAL PROGRESS.

### PATHOLOGY, BACTERIOLOGY AND HISTOLOGY.

**Formation of Poisons in the Organism.**—Of the many substances which have a deleterious influence on the red blood-cells, only a few are known as organic or inorganic poisons. In the numerous diseases in which one can observe only the destructive effect on the blood-corpuscles, but little is known of the nature of the toxins themselves. E. GRAWITZ (Deut. med. Woch,. Dec. 26, 1901) differentiates two processes which may bring about a hemocytolysis. The first is dominated a "plasmotropic" effect and may be considered as due to toxins which, while leaving the corpuscles in the circulation intact, destroy the same in the liver, the spleen, and the marrow, without there being an extrusion of hemoglobin into the plasma. The other he calls "plasmolysis" and includes those poisons which cause a disintegration of the red cells in the circulation with the appearance of a hemoglobinemia and its sequelæ. The type of the former class is lead, which causes a granular degeneration of the red cells in the organs, but no plasmolysis in the circulating blood. A similar phenomenon was observed in patients subject to hemorrhages from gastric ulcer or carcinoma or who had swallowed a large amount of blood from a pulmonary hemorrhage, the condition disappearing when the bleeding had ceased. In patients with external hemorrhages this was not found. The administration of various hemoglobin preparations also caused a granular degeneration of the red cells, increased by continued and larger doses, and disappearing when the drug was stopped. The author believes from his clinical experience that the passage of blood or preparations of blood through the intestinal tract causes the formation of substances which exert a true plasmotropic influence on the red cells. These observations may also serve to explain the anemia found in anchylostoma infection, in which not only the actual loss of blood from continuous hemorrhages must be considered, but also the auto-intoxication from the absorption of poisons developed in the extruded blood.

**Amebic Abscess of Liver.**—Of clinical interest in this case reported by J. A. SCOTT (Proc. of the Patholog. Society of Philadelphia, Nov., 1901) are a large latent abscess with no history of previous dysentery, sudden rupture into right pleural sac, with all the signs of acute hemorrhagic pleurisy, and the development and subsequent disappearance of a pyopneumothorax. The pleural exudate was a thin brownish-red material, with a heavier brownish flocculent sediment, containing fatty leucocytes, but no amebæ, and sterile on culture. At autopsy amebæ were found by Dr. Flexner in the wall of the abscess; there was great thickening of the pleura above the abscess, and in the colon were found pigmented scars of some former ulceration (dysentery).

**Hematic Antidotes.**—Probably no author has been more active in developing the theory of hematic antidotes than Ehrlich. PROFESSOR GRUBER (Med. Press and Circ., Dec. 25, 1901) reviews the whole matter in the following terms: Ehrlich believes the action of antitoxins on toxins depends purely on the nature of a chemical transposition of elements which can be demonstrated according to the law of multiples. Concentration and temperature largely influence the results, although the toxins under any condition have the notable power of diffusion in gelatinous media. An excellent parallel of this action is to be found in the union between saponins and cholesterin of the blood-serum. This combination destroys the hemolytic action of the saponins. It must be borne in mind, however, that the combination of toxins and antitoxins does not abolish their individual existence. If the mixture be heated to 68° C. the poisons will be found as active as ever, although a considerable time may have elapsed. Therefore one must conclude that the union is not chemical. Furthermore, this explains why in some cases after combination poisonous effects are seen after injecting animals with the fluid. Another property of the toxins is that their power decreases on standing. If the animal does not die an apparent latent period appears before the paralysis and edema set in. This modified toxin he has named toxone and a still further modification he has called toxoid. He assures us that the bacillus of diphtheria produces toxins and toxones and that the latter may be converted into toxoids. Another property of these organic poisons is their great power. One-fourth of a milligram of bacterial poison will kill a man, while it will take seventy of strychnine. Notwithstanding this deadly effect, the dose, or even a larger dose, will go through a period of incubation lasting in some cases many weeks. It seems also a fact that the more sensitive an animal is to the poison, the more quickly the injection is worked out of the blood-current into the general system. Again, if the animal is injected with tetanic and antitetanic toxin at the same time, it will be found that the same quantity of the latter is required to neutralize the former as in the laboratory experiments *in vitro*. If, however, seven or eight minutes elapse before injecting the antitoxin, its quantity must be largely increased until fifteen minutes have passed, when the serum dose seems to have be-

come stationary and usually inert against the toxins. In susceptible animals the poison passes so rapidly out of the blood into the system that death occurs before antitoxin can have any effect. In some cases tetanic toxin taken from the brain of susceptible animals is inert, although that recovered from other organs is still active. Ehrlich explains this by stating that it combines with various salts in the nervous system, which render it temporarily inactive. The incubation period for these toxins varies with the mode of injection. Subcutaneous and intravenous injections have much longer incubation periods than intracerebral applications.

**Elastic Tissue in Cicatrices.**—The question of proliferation of elastic tissue has been much discussed. Guttentag of Unna denied the presence of elastic fibers in cicatricial tissue; Passarge, Kromejer and others assert that they appear after a time in the newly-formed tissue; some observers believe them to be derived from the elastic fibers in normal tissue, others that they have their origin in the connective tissue cells. P. PEZZOLINI (Gazz. degli Osped., Dec. 22, 1901) through a series of experiments has proved their derivation to be from adult elastic fibers. Wounds of uniform size were produced in dogs, some of which were allowed to heal in the regular course of cicatrization; in others skin grafts were introduced. After the wounds were healed, specimens including the cicatricial and surrounding tissue were excised, and, after preparation and staining, examined under the microscope with the following findings: The first appearance of new elastic fibers was from the sixtieth to seventieth day, the number varying according to the age of the cicatrix; they were first seen at the lateral margins of the cicatrix, while their development in the center was much delayed, except in those wounds in which adult elastic tissue had been introduced by grafting, in which case, simultaneously with the formation of fibers from the elastic tissue of the surrounding skin, new fibers were formed from the transplanted elastic tissue of the graft. The author was able to observe the division of the ends of the cut elastic fibers, and their development and extension into the connective tissue of the cicatrix.

## SURGERY.

**Treatment of Inoperable Tumors.**—Of the several injection methods for the treatment of inoperable malignant growths, the results obtained from the use of methylene blue and Coley's mixture in a series of cases are reported by C. GEORGE (Phil. Med. Jour., Jan. 11, 1902). Methylene blue was used in two cases of sarcoma of the neck. The injections were given daily in gradually-increasing doses of from five to thirty minims of a 1 to 500 aqueous solution directly into the tumor. A marked diminution in the size of the tumor was noted, with some relief from pressure symptoms, but there was an excessive stimulation of tumor cells in the neighborhood. Both cases terminated fatally. Coley's mixture of the toxins of streptococcus erysipelatis and bacillus prodigiosus was used in four cases, sarcomas of the upper jaw, forearm, mandible, and lymphosarcoma of the neck. In all cases there was increased growth due to the irritant action of the toxins and the absorption of the latter, together with the products of the necrotic changes, caused general weakness and depression. One case which seemed improved was an ordinary granulation tissue tumor, with no evidence of sarcomatous tissue in it. As the diagnosis between round-cell sarcoma and ordinary granulation tissue is difficult, there is a question as to whether certain cases reported improved were in reality true sarcomata.

**Acute Pancreatis with Fat Necrosis.**—An interesting case is reported by W. J. MAYO (Jour. Amer. Med. Assoc., Jan. 11, 1902). The patient had suffered from attacks of indigestion for two years previously when he was seized with sudden epigastric pain, accompanied by marked symptoms of collapse. Acute intestinal obstruction developed, with other signs upon which a diagnosis of gangrenous cholecystitis with perforation was based. Operation was done. The signs of fat necrosis were evident. The pancreas was found enlarged, the gall-bladder thickened and containing a stone as large as an egg. The stone was removed, a rubber tube inserted into the gall-bladder and brought out in the right groin. A free discharge lasted for several days, containing both pancreatic fluid and bile. The patient was in a critical condition for a week, but made a complete recovery in seven. The gall-stone was evidently the cause of cholangitis, which extended to the pancreatic ducts, with resultant pancreatitis and fat necrosis, the operation checking the process short of abscess formation.

**Colon Transplantation.**—Not only the magnitude of the operation itself, but the very unfortunate condition of a patient subsequently afflicted with an artificial anus, have hitherto largely discouraged attempts at extensive resection of the colon. DE QUERVAIN (Rev. Méd. de la Suisse Rom., Dec. 20, 1901) has suggested a new operation which seems at least to obviate the necessity of the preternatural anus. He was led by the researches of Kummel on the vascularization of the colon to believe that considerable division of the mesocolon was still compatible with the life of the gut. In a case in which he was compelled to resect the descending colon, therefore, he freed the mesocolon and sewed it to the rectum with very perfect results. He believes that the rectum might be extirpated and the gut carried down and implanted at the anus. The operation is indicated only in cases of extensive malignant or mycotic disease of the descending colon, or of incurable polypoid colitis, or of combined disease of rectum and colon.

**Fracture of the Lower Jaw.**—The variety of splint recommended for fracture of the lower jaw is proof of the difficulty of treating this common injury. J. WEITING (C'blatt f. Chir., 1901, No. 51) had a difficult case of this kind and treated it in the following manner: A kick from a horse had caused a threefold break in the bone, one on each side at about the same point, plainly visible and palpable from the mouth, with all the typical symptoms. The third break was complicated and between the incisor and the eye teeth. There was moderate overriding of the fragments. After numerous failures to maintain reduction with various kinds of rubber splint, he carried out the following procedure: A hole was drilled through the alveolar margin, a little to the left of the median line, near the point where the mucous membrane is folded over between the bone and the lip. Through this hole a long silver wire was passed and wound on the left side about the canine tooth. In this way the drilling of a second hole was avoided and, moreover, the oblique direction of the silver wire aided in correcting the overriding and displacement of the fragments at this point. Thus, therefore, one of the fractures was reduced and fixed. It was found that by pulling upward lightly on the wire perfect reduction and fixation of the other two breaks was brought about. This suggested the plan of taking a strip of zinc, bending it into a hoop and passing it around the neck on a level with the body of the lower jaw. Here it was retained by a plaster-of-Paris helmet bandage which extended from the brow to the root of the neck. The hoop of zinc passed out of the bandage opposite the chin, where the silver wire previously described was fastened in notches. In this way with the least possible inconvenience to the patient a cure was obtained. So inge-

nious and rational a device to overcome a difficult surgical problem is worthy of note and trial.

**Oophorectomy for Mammary Carcinoma; Another Version.**—According to views recently expressed at St. Bartholomew's Hospital, this new mode of treatment has not all the advantages which have been claimed for it. H. T. BUTLIN (Brit. Med. Jour., Jan. 4, 1902), in beginning his argument against it, says: "Before I speak of the cases in which the operation and thyroid extract have been employed, I must draw your attention to his (Dr. Beatson, of Glasgow) theory. He considered cancer of the breast to be a local proliferation of epithelium, and he said that when the cells had proliferated and increased in number they gradually swarmed out into the surrounding tissues and produced the microscopical structure of cancer. He said there was no parasitic character to the disorder. He began to wonder how, within the bounds of this premise, the disease might be limited. In ordinary lactation there is a similar proliferation of epithelium, but with this difference—the tissue, instead of heaping up in the acini, as in carcinoma, undergoes fatty degeneration and passes away as milk. During this physiologic process the woman never menstruates. With very unusual ingenuity he argued that similar conditions might be produced by removing the ovaries and the piling up of the cells in the ascini stopped." This is, in effect, Dr. Beatson's theory. Dr. Butlin then reviews the rather unpromising history of the cases treated by the new method and closes by saying that the evidence so far all pointed toward the desirability of local treatment and that in all probability Dr. Beatson's method would never supplant this operation, no matter what might be the effects of employing them together. This observation he bases on the following conclusions: (1) The hope that can be given to a goodly number of women nowadays that operation may be quite successful. (2) If the disease still kill the patient, it may do so by recurring in some distant organ and with much less pain and suffering. (3) If it recur *in situ* in the form of nodules, the patients generally suffer far less than if no operation had been performed.

**Burns from Roentgen Rays.**—Since the Roentgen rays have been so generally employed for diagnostic and therapeutic purposes, the peculiar but characteristic effects of prolonged use of these rays upon certain people have become an important subject for investigation and treatment. C. BECK (Med. Rec., Jan. 18, 1902) says that the most characteristic difference between ordinary burns and integumental changes produced by the Roentgen rays is the fact that the latter do not manifest themselves before the lapse of a period of incubation, as a rule, after about two weeks. This latent period in burns of the first degree is followed by a hyperemic stage, at first light, later dark, and, finally, becoming brown and scaly. After a few weeks there is complete recovery sometimes followed by pigmentation. In the bullous form intense reaction occurs and depilation if the area was covered by hair. Pigmentation and telangiectasis nearly always remain. In the necrotic type reaction appears within a few days and requires months for its cure. The constant contact with these rays, which many are obliged to subject themselves to in running machines, has resulted in the so-called terra-cotta hands. The skin is wrinkled, shriveled, vulnerable and partially cracked, the nails horny and the phalanges so much thickened that there is tension when motion is exercised. The specific action which seems to be due to these rays has been taken advantage of in the treatment of various skin diseases and also in malignant tumors. The value of them is still somewhat uncertain, but their marked bactericidal properties cannot be doubted any longer. Many valuable hints for rational therapy of bacterial diseases will certainly be forthcoming. In regard to precautions it may be said that the healthy skin surfaces should be protected by tin-foil or lead plates during the process of irradiation for therapeutic purposes. The treatment of the burns is the same as for ordinary burns of a similar character.

**Omental Anastomosis for Cirrhosis of the Liver.**—Numerous cases have been reported of recoveries from the symptoms of cirrhosis by surgical treatment and the operation is now rather frequently performed. T. C. WITHERSPOON (St. Louis Med. Rev., Jan. 11, 1902) reviews the literature on the subject and advises a more certain and general formation of adhesions between the surface of the liver and diaphragm. The incision may be made, under cocaine, above the umbilicus; before the omentum is sewn to the anterior abdominal wall the peritoneum around the wound should be scrubbed thoroughly with a piece of gauze, and it is of decided value also to rub off the liver peritoneal cells just under the diaphragm to allow of adhesion of this organ to the wall. Undoubtedly this improves the circulation of the liver superficially and may put off the day when the necessary liver incompetency appears and auto-intoxication arises. The parietal peritoneum may be separated around the wound and the omentum tucked beneath it to secure more perfect union, or the peritoneum may be excised for a variable distance and the omentum attached to the denuded surface.

**Treatment of Appendicitis.**—The mortality from appendicitis is certainly much higher than it should be and when young men and women in the prime of life and with excellent health are carried to their graves after an illness of only four or five days the medical profession must realize that their duties have been very poorly performed and upon their shoulders rests the responsibility for these untimely deaths. J. H. CARSTENS (N. Y. Med. Jour., Jan. 18, 1902) refers to the prevalent idea that, if the patient is put upon a starvation diet and the inflammatory process allowed to subside, he will be better able to stand an operation. It is true that in many mild attacks this treatment will be satisfactory, but in the present stage of diagnostic skill it is impossible for one to determine the exact condition within and even with mild symptoms a gangrenous process or an abscess just ready to rupture may be present. Furthermore, after a starvation diet of two or three weeks, especially if an infective process has been present, the patient's condition is certainly not improved nor are the local processes more favorable for removal. With our present knowledge the only conservative treatment which is safe is immediate operation as soon as the diagnosis is made, for it is most radical for any physician or surgeon to dare to leave such a treacherous condition within the abdominal cavity of his patient.

**Primary Abdominal Tuberculosis.**—Although tuberculosis undoubtedly originates in a large percentage of cases in the respiratory tract, it can be no longer denied that primary tuberculosis of the belly is a frequent condition. L. F. FLICK (Penn. Med. Jour., Dec., 1901) believes that the bacilli are often taken in with the food and are absorbed by the intestinal lymphatics and lodge in the mesenteric glands. They probably do not multiply in the intestinal canal, for the conditions there are not favorable to their growth. Since the suggestion and partial proof have been offered that bovine tuberculosis is not communicable to the human being, this theory of intestinal infection becomes less plausible and yet there are so many ways that the dried infected human sputum may contaminate food and drink that such an infection does not seem at all strange. The

treatment of such cases is, of course, surgical and the important part of it is to expose the abdominal cavity as much as possible and manipulate the contents with the greatest freedom. Dr. J. Price recommends the free use of iodoform in these cases and says that he has used even an ounce in one case without any disagreeable after-effects.

**The X-ray in the Treatment of Sarcoma.**—This method is advocated in inoperable cases and also as a prophylactic against recurrence in patients who have been treated surgically, by W. A. PUSSEY (Jour. Amer. Med. Assoc., Jan. 18, 1902). He reports a case in which a clinical and pathological diagnosis was made of a small round-cell sarcoma of the neck. Operation was done, but shortly afterward a similar tumor appeared on the other side of the neck. X-ray exposures were tried for twenty-one days, with a hard tube and a weak light, about 5 cm. from the surface and for from ten to fifteen minutes at a time. Toward the last a pronounced dermatitis developed; the exposures were then stopped. Within ten days of beginning treatment, the tumor had shrunken and motion was freer, and when the exposures were discontinued only a small (almond-sized) gland remained, freely movable and painless. Up to date (Jan. 12, 1902) no change had taken place. In a second case, one of osteosarcoma of the shoulder, far advanced and accompanied by profound cachexia, no improvement was noticed except relief from pain. In a third case of inoperable sarcoma of the pectoral muscles and the shoulder, a like result was observed. Both patients were evidently beyond the reach of any form of treatment. In two cases of Hodgkin's disease which were subjected to a series of X-ray exposures it was found that the further growth of the enlarged glands was inhibited and they themselves became reduced in size.

**Intraperitoneal Rupture of the Kidney.**—This serious surgical condition is not very uncommon and always deserves prompt, radical treatment. F. DE QUERVAIN (Deutsch. Z'schrift f. Chir., Dec., 1901) has been experimenting on animals with reference to the diagnosis and the treatment of damage to the kidneys. The following are his conclusions: The differential diagnosis between intra- and extraperitoneal rupture of the kidney, on the one hand, and, on the other hand, damage to other organs of the body, individually or as complications of the former, presents very great difficulties; consequently, it is often necessary to be satisfied with a probable diagnosis. Further progress must be made, especially in determining a damage to the peritoneum by urine and blood, leading to an infectious peritonitis. Such may also come from rupture of the bowels. We are not aided much in this particular by the usual diagnostic aid of the blood-examination. It is also necessary for the sake of prognosis to distinguish between very great damage to the organ and lesser degrees of contusion. In both damage to the diaphragm and the danger of bleeding are important, because within the abdomen bleeding finds no real obstacle. As a rule, however, there is only danger of grave injuries or of peritonitis through infection. The severe cases usually die early from the loss of blood and from shock. Consequently, peritonitis is not often the cause of death. In the less severe cases the picture is somewhat different because not only is the danger from bleeding much less, but the whole process is slower and permits the formation of adhesions which localize the abscess. In the treatment of this condition it seems far wiser not to interfere in the mild cases, but they should be carefully watched. If unfavorable symptoms develop, indications for treatment may be followed. The severe cases, on the other hand, should be operated on as quickly as possible, so that the sources of hemorrhage may be reached and checked and all possible damage to the other organs of the abdomen repaired.

**Intestinal Anastomosis.**—Suture of the intestines, especially after the removal of part of them, has been an interesting problem for many years. J. FRANK (Ann. of Surg., Jan., 1902) compares the mechanical method with the so-called suture methods of uniting the bowel and lays down the following essentials for making the operation successful: Simplicity of application, saving of time, uniformity of coaptation, arrest of hemorrhage, slight contraction of scar, proper relation of coats of the intestine at the point of union, avoidance of infection, least disturbance of peristalsis, avoidance of pocketing and shelving, reduction of mortality, and minimum number of lesions. The majority of these are self-explanatory and, therefore, need no further comment, except that, after recognizing them, the following conclusions may be drawn in favor of the mechanical means of anastomosis: (1) With no other method can be obtained all the excellent qualities in such an ingenious combination as with the Murphy button. (2) No suture method can show such a low mortality. (3) The perfect holding together of the intestinal ends throughout their circumference with the Murphy button obviates the danger of leak. Von Chlumski subjected all the methods to pressure with water and demonstrated the inferiority of the suture methods. For end-to-end anastomosis the button is the only device which has achieved great triumph. In this operation the suture methods show their greatest mortality.

**Stitch Abscesses.**—These annoying abscesses depend usually upon two conditions, namely, the state of the surgeon's hands and the preparation of the patient's skin. A. E. MAYLARD (Ann. of Surg., Jan., 1902) says that he has found the best means of sterilizing the hands to consist in plunging them for five or ten minutes into water as hot as can be borne. The effect of this is to dilate the capillary vessels as is indicated by the redness of the skin and thus to excite active secretion of the two sets of glands. By the prolonged exposure to the hot water and by the copious secretion the surface epithelium is rendered sodden and then removed by rubbing the hands together under the water and then by using ordinary soap. Lastly, the hands are washed off in a warm solution of carbolic acid (1 to 40). This is the lotion kept in use throughout the operation for the surgeon's hands. For cleansing the skin of the patient he has found the following method very effectual: First, the skin is scrubbed in the usual way with soap and water and with turpentine, alcohol or ether if necessary. Then over a wide area hydrated lanolin oleate of mercury (20 per cent.) is rubbed in. The same ointment is smeared on a piece of gauze and placed on the skin for twelve to twenty-four hours. Then another quantity of the ointment is rubbed in and a second piece of gauze smeared with it and applied. This is not removed until the time of the operation. At least twenty-four hours, preferably forty-eight hours, should be devoted to the preparation of the patient in this way. Ten minutes are required for each "rubbing in" of the ointment. On the operating-table the piece of gauze is removed and any superfluous ointment is rubbed off with a piece of dry sterilized gauze. The skin of the patient is now ready for operation. The originator of this method states that chemical examination of the skin for mercury was negative—probably because the quantity was so very minute in the first place, and, in the second place, too rapidly absorbed to admit of detection. Bacteriologically, the number of germs common in the skin was found to be very much reduced. Those which were present were due, no doubt, to the fact that it is impossible by any means to reach

all the possible places where they abound, namely, hair follicles, sebaceous and sweat-glands, and the various layers of the epithelium. However, the decrease in their number was so great as to support the value of the method. The clinical records gave incontestable proof of its value. On these grounds he commends it for trial. It is, of course, available only in cases where a long preliminary preparation of the patient is possible. For emergency operations it could hardly be used.

**Gastro-enterostomy.**—The regurgitation of bile into the stomach after a gastro-enterostomy has proved in some cases an insurmountable obstacle, although the most approved methods of operating have been followed. E. TAVEL (Revue de Chir., Dec. 10, 1901) relates a case in which several operations were necessary to overcome it. The patient suffered from hyperchlorhydria of obstinate type. The first operation was done November 22, 1896, by Dr. G. Sick (Hamburg). It was the typical Kocher method of gastro-enterostomy, anterior and antecolic. The union between the stomach and the intestines was on the greater curvature of the stomach near the pylorus. On January 16, 1897, Mikulicz (Breslau) did the second operation in order to relieve the dilatation of the stomach due to the fact that the anastomosis has contracted to the size of a lead pencil. At this operation a gastro-enterostomoplasis and entero-anastomosis were done after the method of Braun-Jaboulay. This operation was unsatisfactory, because the symptoms continued equally severe and obstinate. The third operation was done by Kocher (Berne) in June, 1897. It consisted chiefly in a folding of the afferent loop of the intestine, after the method of Von Hacker, to which was added an elongation of the mesentery of this same afferent loop. This was followed by considerable improvement in the symptoms, but still there was much to be desired. The fourth operation was, therefore, undertaken in August, 1897, by Tavel at Berne. During it the duodenum was separated from the stomach just beyond the pylorus and an attempt was made to restore the abdominal wall. This served to prevent all flow of bile by reversed action of the bowel into the stomach, but still another step was necessary. At the fifth operation September 4, 1897, by the same surgeon, the afferent loop of the intestine was cut away. The condition in the abdomen was then as follows: As the stomach had been closed just beyond the pylorus, its outlet consisted in an anastomosis with the small intestine as just described. The bowel was so arranged as to make its peristalsis pass in the same direction as that of the stomach. Behind this loop of the intestine lay the colon running transversely from side to side. From beneath this structure appeared the stump of the afferent loop created at the fifth operation. Just beneath the colon it joined the loop from the stomach by a lateral anastomosis. In this way it will be seen that the bile could not reach the stomach except by traveling against the peristalsis and against food from the stomach vertically upward for the distance represented by the separation between the stomach and the colon. Tavel claims that the results were most satisfactory.

**Gastrostomy.**—The necessity for making an opening into the stomach by means of which food may be given when the normal passages are out of function is often urgent to the last degree. A. DEPAGE (Jour. de Chir. et Annales de la Soc. Belge de Chir., Nov. and Dec., 1901) presents the following exceedingly ingenious plan: In the front wall of the stomach, extending almost from curvature to curvature and opposite the junction of the left and middle thirds of the organ, he makes a long horseshoe-shaped flap, with the base upward and the sides parallel and wide enough to permit the flap to be folded and sewn around a rubber tube. Placing this tube in position he folds the flap of the organ about it so that mucous membrane is everywhere in contact with it. This brings the peritoneal surfaces in contact. In a similar way the hole representing the wall of the stomach removed in the flap is closed in the same way. This makes a long, continuous suture line which begins below at the apex of the flap and ends above at the tip of the new inlet to the stomach. This new gullet, as it might be called, is then passed through the abdominal wall and secured there. After union has taken place food may be easily passed into it. It is a most successful and certain method of providing a well-protected and permanent false opening into the stomach.

## ANATOMY AND PHYSIOLOGY.

**Conversion of Pancreatic Zymogens into Enzymes.**—Knowledge concerning the zymogen of the proteolytic ferment of the pancreas has received scarcely any additions since 1875. Although it is known that the rennet ferment of the stomach does not exist as such in the gastric juice, but as a zymogen, no proof seems to have been adduced of the existence of a similar body in the pancreas. H. M. VERNON (Jour. Phys., Dec. 23, 1901) has made a series of observations upon these closely-related ferments in order to determine more exactly the conditions under which the zymogens of trypsin set free their enzymes, the rapidity of such transformation, and the degree of stability possessed by these enzymes when once they are formed. He finds that extracts of a fresh pancreatic gland as a rule show no ferment activity for some days and then more or less suddenly develop nearly their maximum power. When the glands from several different animals are minced together and extracted the ferment activity begins to develop at once. The destructibility of the trypsin, as tested by keeping the diluted extract for one hour at 38° C. with 4-per-cent. NaCl and determining the percentage of ferment destroyed at the end of this time, varies concomitantly with the activity of the extract. If filtered glycerin extracts of zymogen be diluted with water they spontaneously develop tryptic power at a rate increasing with the degree of dilution. The rennet ferment in inactive extracts is set free as well as the tryptic, but it was found that the liberation of the ferment from its zymogen was effected not by the rennet ferment, but by the tryptic. It was found that the amount of ferment liberated by exposure of the minced gland substance to the air for twenty or more hours was as a rule very small, most of the ferment being set free after the addition of the extracting liquid. The addition of small quantities of tryptic digestion products to the inactive extracts was found to have a moderate enzyme liberating effect. When oxygen or $CO_2$ was bubbled for one to three hours through diluted glycerin extract kept at 38° C., the enzyme was not liberated any more rapidly or slowly than in the unaerated extract. If, however, 1 per cent. of an active extract was added, then in one hour the oxygen increased the enzyme formation from 28 to 43 per cent., while the $CO_2$ decreased it from 6.4 to 12 per cent.

**Movements of the Intestines as Studied by Means of the Roentgen Rays.**—The investigations of the intestinal movements have been beset by the same difficulties that characterize the investigation of the gastric mechanism. Pathological subjects or animals subjected to the disturbing action of drugs or serious operations have been the only sources of our knowledge. Under these conditions a considerable difference of opinion as to the nature of the normal movements of the intestine has existed. In order to arrive at a clearer understanding of this subject W. B. CANNON (Amer. Jour. Phys.,

Jan., 1901) has utilized the Roentgen ray. The observations were made upon cats. Subnitrate of bismuth one-tenth to one-third the weight of the food was mixed with what the animals ate. He finds that in this manner the movements of the intestinal contents and thereby the movements of the intestinal walls are visible on the fluorescent screen. The activity most commonly seen in the small intestine is the simultaneous division of the food in a coil into small segments and a rhythmic repetition of the segmentation each time applied to the new segments formed from parts of those just divided. Peristalsis is usually combined with segmentation. The ileocecal valve is thoroughly competent for food entering the colon from the ileum. The usual movement of the transverse and ascending colon and the cecum is an antiperistalsis. This recurs in periods about every fifteen minutes and each period lasts about five minutes. This gives a new significance to the ielocecal valve, for the food now in a closed sac is churned and mixed by the constrictions running toward the cecum and again exposed to the absorbing walls without any interference with the process in the small intestine. As soon as new food enters the large intestine a strong general contraction takes place along the cecum and ascending colon; a moment later antiperistaltic waves begin to pass. With accumulation of food in the transverse colon deep tonic constrictions appear one after another and carry the food into the descending colon. The observations have revealed no evidence of antiperistalsis in the small intestine, but since the ileocecal valve will allow nutrient material under pressure to pass backward the antiperistalsis of the large intestine may force into the small intestine considerable portions of large nutrient enema. Signs of emotion such as fear, distress or rage are accompanied by a total cessation of the movements of both small and large intestine. The movements continue in the cat both during sleep and at night.

**Formation of Bile Pigment and Bile Acids.**—That these substances are not formed by the liver-cells is demonstrated in a series of experiments by A. C. CROFTAN (Phil. Med. Jour., Jan. 18, 1902), which also show that such pigments and acids can be formed in various parts of the organism other than the liver, and that they can be formed from hemoglobin outside of the organism by a purely chemical, fermentative process and without the intervention of the liver-cells. To determine the rôle of the latter in the formation of bile pigments and acids, a watery extract of fresh liver-cells (of a calf) was prepared, from which these had been extracted by alcohol. To this was added a solution of hemoglobin and dextrose (1 per cent. in the proportion of one to four. It was found at the end of a week that all the hemoglobin was destroyed; the fluid contained the bile acids and the sediment substances which gave the typical reaction of bile pigments, showing that a conversion of hemoglobin into bile pigment and acids had taken place without any "vital" action on the part of the liver-cells; the process was chemical, and the active agent a substance that was soluble in water and therefore unorganized. As the process resembled a true digestion, the fluid was tested for the presence of a ferment. Fibrin flakes placed in the liver-cell extract, and the mixture alkalinized with a 7-per-cent. soda solution, were partially digested, and albumose, peptone and tyrosin were found. The probability of the active substance being *trypsin* was substantiated by confirmatory tests, solutions of both giving the same reactions. Moreover, when a solution of trypsin was added to a mixture of hemoglobin and dextrose, after a week's time the fluid contained bile acids and the sediment, pigment. It is probable that the trypsin is in part normally absorbed from the intestine, but that the greater part reaches the liver via the pancreatic veins in the portal blood or via the lymphatics in the hepatic artery. If the formation of bile acids and pigments from hemoglobin by the action of trypsin in the presence of dextrose is a purely chemical process and altogether independent of the specific action of any particular group of cells, one must conclude that wherever in the body free hemoglobin is present, together with dextrose and trypsin, this conversion into bile products can occur and not necessarily in the liver alone.

## MEDICINE.

**Rapidly-fatal Scarlatina.**—The most rapidly-fatal case mentioned in Nothnagel's System of Medicine died in twenty-six hours; in Keating's Cyclopedia, in twenty-four hours. Bessey and Goodhart had seen cases die in twenty-four hours. W. S. MORROW (Montreal Med. Jour., Dec., 1901) cites the case of a boy of two years and eleven months who came in from play and felt sick and vomited at five in the afternoon, had a loose, dark-colored stool in the night, played with his brother in bed the next morning, ate a baked apple at noon, and died in convulsions at half past five. No physician was in attendance, but four hours after death reddish patches were visible on abdomen and thighs, the glands at the angle of the jaw were enlarged, and, on prying open the mouth, the tonsils were seen large and red, the redness extending upward on to the palate. The viscera were negative. A scarlatina epidemic was raging at the time, and a brother developed the disease a few days later.

**Interventricular Aneurism.**—The patient had had syphilis and five years ago had a severe fall from a horse. Three years ago he noticed palpitation and dyspnea, with precordial pain and fainting spells. The precordium was prominent and bulging and there was an apparent area of pulsation, 5 cm. in diameter, in the third left interspace. Over this area was heard a systolic murmur most intense over and above the second costal cartilage. There was a marked thrill. At intervals the patient had attacks of faintness with rapid feeble pulse and failure of eyesight. The autopsy, performed by R. G. CURTIN (Proc. of the Path. Soc. of Phila., Nov., 1901) showed a saccular dilatation about the size of a walnut above the origin of the aorta anteriorly; the left auricle and mitral valve were much dilated, and the undefended portion of the interventricular septum was found bulging into the right ventricle, into which it opened through a small orifice, probably the result of ulceration. The aneurism was large enough to hold a good-sized walnut.

**Amebic Dysentery.**—This is a disease which has so rarely been described in children that the diagnosis is probably never entertained by the practitioner. Yet within a short space of time five cases were identified and successfully treated by S. AMBERG (Bull. J. H. Hosp., Dec., 1901) at the Johns Hopkins Hospital. The patients ranged in age from two to five years, and illustrated a moderately severe type of the disease, with the exception of one child who was very seriously sick. The clinical picture in these cases was very indefinite. The appetite and general health were good, fever and acceleration of the pulse were hardly noticeable, and the blood-examination showed only a very moderate anemia of the secondary type. Stools varied from two to six in twenty-four hours, were rarely associated with pain, and presented nothing characteristic to the eye. They were of every degree of consistence and might, or might not, show admixture of blood. The odor was always most offensive. Microscopically, three very typical structures are to be found, namely, live amebæ con-

taining red blood-cells, Charcot-Leyden crystals, and numerous eosinophile cells. The presence of either of the latter elements should make the observer extremely suspicious of amebic dysentery, as they occur in no other condition except helminthiasis, which can easily be excluded. The presence of the ameba is, of course, final. Treatment consists in irrigations twice daily with solutions of quinine, 1 to 5,000; the rest of the treatment is merely adjuvant.

**Bruit de Galop.**—French doctors distinguish between a "bruit de rappel," in which there is a reduplication of the second sound of the heart, and a "bruit de galop," in which there is a reduplication of the first sound. It is upon the subject of the latter that D'ESPINE (Rev. Méd. de la Suisse Rom., Dec. 20, 1901), who with Potain is the authority on the phenomenon, contributes an interesting résumé. By means of the cardiogram he has established definitely that the first sound of the series is protosystolic in time and not presystolic, as was believed by Potain. He attributes great diagnostic value to the sign, which is always an indication of relative myasthenia on the part of the heart. It occurs most frequently in connection with nephritis, either at the beginning, before compensatory hypertrophy has taken place, or at the end, when insufficiency is already imminent. Very often it is associated with an increase in arteral tension. The mechanism of the sign is simply a double effort on the part of the overstrained ventricle to rid itself of its contents. Coming, as it does, before the actual results of incompensation have made themselves evident, it is of enormous prognostic and therapeutic importance.

**Blood of Syphilitics.**—Important changes in the blood are said to be found in syphilitics, provided accurate and careful examinations are made. Justus's test has long been of assistance before the secondary rash and depends upon the diminution of the hemoglobin about ten to fifteen per cent. during twenty-four hours succeeding an inunction with mercury. L. H. WARNER (St. Louis Cour. of Med., Dec., 1901) has found that in the first stage the hemoglobin is diminished, but the red cells are about normal in number, as in chlorosis. The leucocytes are increased, but a differential count shows a large increase is lymphocytes. In the secondary stage the hemoglobin is further diminished and the leucocytosis persists. In the third stage there are myelocytes, a marked anemia and frequently eosinophilia. If mercury or iodide of potassium are given in the early stages the young leucocytes (lymphocytes) are decreased and the older forms increased.

**Leucocytes in Hepatic Abscess.**—In view of the divergent opinions concerning the diagnostic value of the leucocyte-count in abscess of the liver, MOSSE and SARDA (Gaz. hebd. de Méd. et de Chir., Dec. 26, 1901) report their findings in four cases. In three of these cases the leucocyte-count ranged between 19,000 and 26,000. These figures are of no diagnostic value, inasmuch as a hyperleucocytosis of similar grade is found in a variety of hepatic disorders other than abscess. In the fourth case the leucocytes numbered 40,000, but here there was present an ulcerous phlebitis of the inferior vena cava. Differential counts showed an excess of polymorphonuclear leucocytes.

**Diagnosis of Syphilis.**—It is a mistake to place too much reliance upon the failure to get a history or sign of the initial lesion of syphilis, because the initial lesion may have been too trivial to attract the patient's notice. In women especially, writes J. C. WHITE (Boston Med. and Surg. Jour., Jan. 16, 1902), the primary lesion is often masked. The use of the term "copper color" in describing the syphilitic efflorescence is deplored. In leprosy, tuberculosis and all chronic tissue changes of the skin, if the lesions have existed for a long time and especially on certain sites, they may have a copper-colored or dull reddish hue. So in syphilis also; but as cases occur the copper hue is exceptional, because the practitioner sees more of the earlier manifestations of syphilis than of the later ones. It is of little diagnostic value whether there are lesions on the scalp or not. Alopecia is not a constant or a reliable symptom. It is said that syphilitic children are emaciated, have wrinkled skin, look like little old people, etc. This is true in some cases, but a large proportion of children with syphilis are born plump and healthy and may remain so for some time. The initial lesion may be confounded with *ulcus molle* or with a herpetic eruption. Internal remedies should be withheld while the dagnosis remains in doubt. Herpes is self-limited; it should be protected and let alone, and the diagnosis solves itself. The soft ulcer, if it does not spread and if it is simply kept clean, gets well under local treatment; it does not undergo marked infiltration and demands no internal treatment. If it spreads rapidly, herpes and the primary lesion of syphilis are excluded. A definite diagnosis should be made before cauterizing. Except in rare malignant forms of syphilis, it is almost a criminal offence to give iodide of potassium in the early stages or while the diagnosis is in doubt, because it is wholly unnecessary and leads to serious errors with regard to the disease afterward. Most dermatologists probably cannot distinguish between possible syphilitic manifestations and an iodide eruption. Scabies must be thought of when discrete lesions are noticed on the penis. A rapidly developing syphilitic rash with fever may simulate measles. Varicella and variola may be mistaken for syphilis when diagnosis must be made at sight. Syphilis may show itself on the scalp in the form of seborrheal scales. The most characteristic form of alopecia in syphilis is loss of hair in ragged, angular patches, many and not large. Another form is general thinning out associated with seborrhea. Pigment changes on the sides of the neck occur—dark areas in which white areas are interspersed. Dactylitis is more frequently tuberculous than syphilitic.

**The Vagus Reflex.**—As long ago as 1870 Waller reported the history of cases of vomiting, of pain in the head and neck, of hysteria and of hemicrania, which were benefited by vagus compression. T. J. MAYS (Boston Med. & Surg. Jour., Jan. 16, 1902) has noticed in cases of phthisis that pressure over the course of the vagus on one side of the neck produces more pain than equal pressure on the opposite side, and that the supersensitiveness corresponds with the side of the chest having the affected lung. This writer believes also that such supersensitiveness is frequently a premonitory symptom of phthisis, and is often associated with other pulmonary and nervous disorders either as a forerunner or an accompanying sign. Cases of persistent paroxysmal cough are described in which this sign was present; these cases resisted the action of morphine, codeine, cocaine, strychnine, etc., but yielded to subcutaneous injections of a 2½-per-cent. solution of silver nitrate, introduced over the sensitive vagus nerve. The cure is believed to be due to the counterirritant action of the silver injections.

**Pneumonia.**—In the treatment of this condition it is important to remember that the chief element of danger is from the introduction of the pneumococcal toxins into the nutritional fluids of the body. E. F. WELLS (Jour. Amer. Med. Assoc., Jan. 18, 1902) recommends for the capillary paresis in ordinary cases calomel followed by salines, bleeding to the amount of 500 to 700 c.c., induction of free perspiration, free taking

of fluids, digitalis and adrenalin hydrochlorate in efficient doses. The value of the polynuclear leucocytes in combating the effects of the pneumococcus is probably without question, and to stimulate their increase when a satisfactory leucocytosis fails to appear he gives nucleinic acid, which may also, he believes, aid in preventing cardiac and vascular thrombosis. The ingestion of chloride of sodium is important and well salted food and frequent saline enemata are recommended. Early prophylaxis in diet and catharsis will usually prevent the uncontrollable fetid diarrhea which comes on late in some cases. Salol is a good intestinal antiseptic in such cases.

**Blood-Examinations in Phthisis.**—In order to throw additional light on the condition of the blood in phthisical subjects, L. APPLEBAUM (Berl. klin. Woch., Jan. 6, 1900) divides his patients into groups corresponding to the stages of the disease. He finds that in the first stage of tuberculosis the blood-changes are not typical. In the type of patient in whom tuberculosis is a matter of years of slow development—the tall, pale, thin, rapidly-growing young subject with poorly-developed chest, anemia is present in the first stage of tuberculosis; the erythrocytes are diminished in number, the hemoglobin is reduced, the specific gravity is lessened and coagulation is delayed. In the class of individuals having good color and a liberal panniculus adiposis, the blood is absolutely normal during the first stage of phthisis. In the first group the toxic effect of a long-standing, but as yet not advanced tuberculosis, is apparent. In the second stage of phthisis the blood is apparently normal, estimated by the ordinary means for the determination of its characters. But autopsies show that the organs of patients dying during the second stage of phthisis are very markedly anemic. The fact is that there is a diminution in the blood mass—a loss of the watery element which conceals the true state of affairs by presenting normal findings when the formed elements are counted or the hemoglobin is tested. The main causes of the concentration of the blood in these cases are night-sweats and diarrhea. In the third stage of tuberculosis the anemia is no longer concealed under the mask of oligemia. During this period hemoglobin averages 40 to 45 per cent., erythrocytes 2 to 2½ million, specific gravity 1040 to 1042. The leucocytes are increased and may number 15,000 to 20,000 *sub finem vitæ*. In the hyperleucocytosis of the final stage the polymorphonuclear leucocytes are relatively increased and constitute 85 per cent. of the total number of white blood-cells.

## NEUROLOGY AND PSYCHIATRY.

**A Method of Treating Genuine Epilepsy.**—Four stages or phases are included in the natural evolution of a case of true epilepsy. The first stage, says M. LION (Berl. klin. Woch., Dec. 30, 1901), consists of the sum of minor anomalies which together form the "epileptic character." These anomalies include pathological irritability, sudden changes in mood, tendency to excesses and passionate outbreaks, unsocial instincts, unreliability in work. The second stage embraces innumerable shades of psychical disturbance, from the slightest momentary overclouding of consciousness to the more lasting and significant subconscious states, during which the patient may commit horrible crimes. The pauses in consciousness known as "petit mal" characterize the third stage; and finally come the typical epileptic convulsions. In the first two stages, Lion treated with rapid and extraordinary success twenty cases of long-standing epilepsy by means of the preparation produced in the laboratory of Professor Poehl and known as Cerebrinum-Poehl. This preparation he employed on theoretical grounds, believing that the disease is of toxic origin and that healthy nerve-elements possess an antitoxic power. Almost from the first day the anomalous psychical phenomena disappeared, to return either not at all or only after a long interval and then considerably modified. Stupid, passionate, aggressive, unsocial patients were transformed into more or less normal individuals. More advanced cases of both "petit mal" and "grand mal" were benefited in a notable degree; attacks became weaker, occurred at longer intervals and gradually tended to cease. In cases of unusual severity "opocerebrinum" was used in conjunction with sodium bromide.

**Pupillary Alterations in the Insane.**—In a previous article it was shown by DE MONTYEL that scarcely one-fifth of a large number of insane subjects possessed normal pupils. In a third of the cases examined inequality of the pupils was present; in a large proportion disturbances of the light reflex or of accommodation were noted, and in a still larger proportion changes in the form of the pupils. Argyll-Robertson pupils were common; more rare was a loss of accommodation associated with normal reaction to light. Mydriasis was present in a larger number of cases than was myosis. In a new series of cases the same writer (Gaz. hebdom. de Méd. et de Chir., Jan. 5, 1902) has undertaken to study the evolution of pupillary abnormalities in the insane. It is shown that the disturbances are not transitory, but are lasting. The findings are regarded as valuable in the differentiation of insanity from general paralysis.

## EYE, EAR, NOSE, AND THROAT.

**Use of Gold Ball to Support an Artificial Eye.**—In cases in which the eyeball has been previously removed and only a small stump remains, the difficulties of successfully fitting an artificial eye are many. In order to give better support and avoid incrustations behind and over the eye and also to prevent the sinister smile which a sunken eye gives, L. W. FAX (N. Y. Med. Jour., Jan. 18, 1902) devised the method of implanting a glass ball beneath the conjunctiva by a median incision and suture of the conjunctiva over the ball. Failures occurred in about thirty per cent. of cases on account of the breaking down of the suture line. Recently he has perfected the method by making an incision, from eight to fourteen millimeters long, obliquely across either the lower inner quadrant (right eye) or the upper outer quadrant of left eye. The conjunctiva is then separated from the deeper tissues and a gold ball inserted. Two sutures are used to close the wound. A conformer made of metal, the shape of an artificial eye with a hole in the center into which the ball fits, is then placed over the conjunctiva and the eyelids closed. The conformer is removed in twenty-four hours and the stitches on the third day. Thus the tension caused by the implanted ball does not come over the center of the eye and the tendency to expulsion is slight. The conformer temporarily holds the ball in place and the results are almost uniformly successful.

## GENITO-URINARY.

**Ulceration Into Rectum of Prostatic and Vesicular Neoplasm.**—In critically examining the course of three cases, A. GUÉPIN (Le Progrès Médical, Dec. 14, 1901) finds that ulceration into the rectum with the formation of a fistula which will permit the escape of urine is followed by great alleviation of the painful vesicular symptoms. In each case the prognosis, which up to that time had been grave, became more favorable and the patients lived for from three to five years. Strangely enough there was no propagation of the cancer along the rectal mucous membrane.

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## DISEASES OF THE PANCREAS.

DISEASES of the pancreas can no longer be said to be beyond the domain of hopeful diagnosis and of timely successful surgical intervention. The symposium on diseases of the pancreas at the meeting of the New York State Medical Society last week (see page 282) brought out in excellent relief the present status of our knowledge with regard to the physiology and the pathology of this important organ.

The advances which have been made in the study of pancreatic nosology and function have come from many sources in different countries. It is a matter of no little pride to be able to say that many of the important steps in the practical knowledge of pancreatic disease and its diagnosis, with the possibilities of successful treatment, have come from American workers. Since Senn's original monograph on the surgery of the pancreas in animals and the evident analogy with human beings that attracted world-wide attention, followed by Fitz's clinical observations on acute pancreatitis and by the work at Johns Hopkins in recent years accomplished by such successful investigators as Flexner and Opie, American investigation of pancreatic conditions has always been in the forefront of progress.

Some of the latest American observations are eminently suggestive and promise to be of great practical service. Flexner has confirmed Hlava's observations made at the Czeckish University of Prague with regard to the probable etiological rôle played by acid gastric contents in the production of acute pancreatitis. This disease occurs especially in alcoholic patients whose gastric juice is liable to be overacid. It was considered that the regurgitation of the gastric contents in such patients into the pancreatic gland through its duct might lead to acute inflammation of the pancreatic substance. Such a regurgitation is not impossible under the stress of the antiperistalsis that often accompanies severe vomiting. These conditions are especially liable to be fulfilled in hard drinkers. Flexner further has shown experimentally that the injection of artificial gastric juice into the pancreatic ducts is liable to set up acute pancreatitis.

Certain European observers point out the fact that an overflow of bile into the pancreas may take place under certain pathological conditions and that this is liable to set up acute hemorrhagic pancreatitis. When a biliary calculus lodges in the ampulla of Vater just within the duodenal papilla, through which the bile and pancreatic ducts open in common into the intestine, it is possible for the calculus to close completely the opening into the duodenum and yet not prevent all communication between the biliary and pancreatic ducts. As the bile is secreted under distinctly higher pressure than the pancreatic juice, it naturally finds its way up the pancreatic duct into the gland. From here it is absorbed and sts up irritative conditions. If but small quantities of bile find their way into the pancreas at intervals only a condition of chronic inflammation results. This gives rise to the induration of the head of the pancreas so often found during operations for gall-stones and which has frequently given rise to the suspicion of associated pancreatic malignant disease. If considerable bile finds its way into the pancreas, an acute inflammatory condition is set up which gives rise to the now classical symptoms of acute pancreatitis and which may be complicated by hemorrhage, fat necrosis, or eventually suppuration.

As to the treatment of pancreatic diseases the indications are much more clear than formerly. For acute hemorrhagic pancreatitis nothing can be done by surgical intervention. Expectant treatment must be the rule, though rather the armed expectancy of the surgeon in an appendicitis case than the helpless facing of a forlorn

hope. At the first sign of a purulent complication the surgeon must be ready to intervene. Dr. Park's expression is that the surgeon's position must resemble his attitude in an appendicitis case—"When in doubt, operate." Operation may save life. If pus has developed there is no other hope for the patient than in its prompt evacuation.

An important pathognomonic sign of pancreatic involvement seems to have been recently discovered by Opie at Johns Hopkins. He found in the urine of a patient dead from acute pancreatitis a fat-splitting ferment. This discovery has not been confirmed, because as yet no other cases of the affection have been under observation. Careful investigation of many other specimens of urine from living and dead subjects failed to reveal any trace of a fat-splitting ferment. It is well known that it is this ferment which causes the fat necrosis in acute pancreatic affections and its mode of distribution through the organism is as yet unknown, but it is thought at times to find its way into the urine and so might rather naturally be expected to appear in the urine. This may prove just the touchstone that was needed to differentiate such conditions as perforation of the intestines, intestinal obstruction and the rarer thrombosis of the mesenteric arteries from acute pancreatitis. The possibility of the occurrence of these conditions has always affected the certainty of the diagnosis of pancreatic affections.

On the whole we would seem to be entering on a period in the diagnosis and treatment of diseases of the pancreas that gives promise of adding another extensive province to the wide domain of abdominal surgery. The pancreas is nearly the last abdominal organ to yield to surgical advance, for already in several cases even the suprarenal capsule has been successfully treated surgically. We have every hope that the labors of American investigators will continue to throw more and more light over this important province of medicine and surgery. *Quod faustum vertat!*

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### CAUSE AND PROPHYLAXIS OF OLD AGE.

OLD age is acknowledged to be a relative term. Some men are as old at forty-five or fifty as others are at seventy. We have accepted the expression "a man is as old as his arteries," but this furnishes very little information as to the causes of the senescence of the tissues that forebodes the near termination of existence.

Connective tissue changes in the arteries mean deficient blood-supply to the important viscera, for the arteries are an essential part of the blood-moving apparatus. There are many cases, however, in which the causes of the arterial degeneration are extremely obscure. There are not wanting good authorities in pathology who insist that arterial changes are always secondary to pathological conditions in important viscera, especially the kidneys. Certain families age very early in life and the definite tissue conditions, whose descent by heredity form the basis for the premature senility, are but very little understood.

Needless to say, the question is extremely interesting. There are many theories on the subject, but very little original observation. Dr. Mühlmann of Odessa, as the result of some recent investigations into the condition of the nervous system at various times of life, seems to have added distinctly to our scanty store of exact information with regard to the causes of old age. He has found as a uniform change from early life to old age a constant increase in the number of ganglion cells in the central nervous system which showed signs of fatty degeneration. In early youth very few of the ganglion cells give evidences of degeneration, although there are always some that have suffered visibly from the wear and tear of life. Until the number of degenerated cells nearly equals the healthy cells, life continues in its original vigor. The healthy cells seem able by their influence to compensate for their inactive or less active neighbors. When degeneration has gained the upper hand, that is, when the number of deteriorated cells exceeds that of the healthy ones, systemic decay begins.

This theory, supported as it is by a long series of observations, would seem to furnish rational answers to certain obscure questions. Longevity, for instance, is well known to be an hereditary or family characteristic. The intricate problem of heredity is simplified by the suggestion that the cells on which depend the essential legacy of vitality from generation to generation are not of many different kinds. A family propensity to longevity is dependent entirely on the cells of the central nervous system. This view is confirmed by our constantly widening knowledge of the importance of trophic influences in the maintenance of tissue vitality and even, as Prof. Pavlov has pointed out, in the accomplishment of organic function. There would seem to be in Dr. Mühlmann's work a further confirmation of the idea that the principle of life is in some manner more essentially and directly united to the nervous tissue and that vital impulses are distributed from this to other tissues.

The axiom "It is worry, not work, that kills" receives a new illustration from these conclusions. The importance of the nervous system for all functional derangements becomes very manifest. Physicians have realized from the very beginning of medicine how important mental states are in the therapeutics of disease. The reason for the influence of mind over matter has not always been clear. Now that we begin to realize how much of organic vitality and function is dependent on forces that originate in the central nervous system, the problem of the physical basis of mental influence loses some of its obscurity. Psychic conditions are essentially dependent on nervous tissues. Disturbances in the psychic sphere induce pathological conditions, not only in the cells that are told off for intellectual processes, but almost inevitably affect sympathetically other important groups of cells in the central nervous system with which they are intimately connected.

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## EARLY DIAGNOSIS OF TUBERCULOSIS.

THE air in New York City has been full of discussions of tuberculosis in its various phases during the last few weeks. At least three medical organizations have devoted evenings to the subject. The monthly meeting of the local branch of the New York State Medical Association and the last stated meeting of the Academy of Medicine called for distinct contributions to the subject, some of which we have presented to our readers in the shape of the original papers, while full abstracts of the others, with the discussions they evoked, will be found in our society proceedings.

The practical conclusion of all the discussions is that the most important thing for the patient is very early discovery of his tuberculosis. To assure this, certain newer methods in diagnosis are recommended by specialists, though all are agreed that none of these new methods can be relied on with absolute assurance. The Roentgen rays, for instance, are in some cases of decided help very early in a case; not so much, however, by showing the actual location of an area of beginning consolidation as by demonstrating that there is a limitation of the excursion of the diaphragm. Very early in pulmonary tuberculosis at a time when the lesions can scarcely be said to have invaded the lung tissue proper, and when the inflammatory reaction is only peribronchial, Nature sets the affected lung at rest to a marked degree. By a nervous reflex, not well understood as yet, the half of the diaphragmatic muscle corresponding to the diseased lung is induced to limit its excursions. This phenomenon can be seen very clearly with the aid of the fluoroscope and, if there are any suspicions of the presence of tuberculosis, constitutes almost a pathognomonic confirmation.

It was pointed out by those who are expert in physical diagnosis that the Roentgen rays are not necessary in order to detect diaphragmatic inequality of movement very early in pulmonary tuberculosis. At a time when the ordinary physical signs give no sure basis for the diagnosis of tuberculous invasion and often serve scarcely to arouse suspicion, careful percussion of the base of the lung in full inspiration and full expiration will show not infrequently that the diaphragm fails markedly to descend on one side as compared with the other. Attention was also called to the fact that while inspection in front may show no difference in respiratory movement, inspection posteriorly may demonstrate easily recognizable lagging and limitation of respiratory movement. Finally, the Litten phenomenon, the actual observance of the excursions of the diaphragm, as it can be plainly seen through the thoracic walls of thin persons, and most tuberculous patients are favorable subjects in this regard, makes the recognition of unequal movements of the muscle on the two sides a comparatively easy matter. The Roentgen rays are then at least not indispensable for the very early diagnosis of tuberculosis in this way.

With regard to auscultation, Dr. Loomis called attention to a portion of the lungs important for the diagnosis of incipient tuberculosis that is not examined with sufficient care in routine practice. If the palm of the patient's hand be placed on the opposite shoulder the scapula moves outward and exposes the root of the lung to more facile examination. Here the breath sounds within the bronchi can be studied better than anywhere else. As the initial lesion in pulmonary tuberculosis consists of a thickening of the tissue lying in and around the bronchi the change in the breath sounds caused by this narrowing of their lumen and roughening of their surfaces can be detected very early. The prolongation and roughening of expiration over this area constitute very probably the earliest significant physical sign in pulmonary tuberculosis.

With regard to the use of tuberculin for diagnostic purposes, notwithstanding the favorable testimony of so conservative an authority as Dr. Trudeau, there is practical agreement that its use

is unjustifiable. In well-marked pulmonary tuberculosis it sometimes fails to give any reaction. When there is a history of syphilis the occurrence of a positive reaction has no pathognomonic significance. Dr. Otis of Boston, who has had probably more experience with the agent than any one else in this country, opposes its use. Many physicians have not only been disappointed, but have even seen unexpected acuity of symptoms follow its use. Dr. Janeway is not sure but in one instance of acute generalized tuberculosis brought to his notice the acute symptoms may have resulted from tuberculin injection at the hands of a preceding medical attendant.

There is a striking uniformity of opinion among experts in diagnosis that the physical signs in the lungs must not be depended on absolutely for the ultimate decision as to the presence of incipient tuberculosis. All of them lay great stress on systemic symptoms that confirm or even suggest the diagnosis. Undue rapidity of pulse is considered very significant. A rise in temperature of more than a degree during the day, Potain's symptom of lowered blood-pressure, as shown by a special manometer designed for the purpose, or loss of weight for which no adequate cause can be found, are all considered possible signs of the presence of tubercle that become positively diagnostic if only suspicious symptoms of doubtful significance are found in the lungs.

Practically all the authorities are agreed, too, that it is better to be safe than to be sorry. On even the suspicion of the presence of a tuberculous process, patients should be warned of their danger. Colds that "hang on" in spite of ordinary treatment and that show a certain absence of reactive vitality in the system are to be treated as if they represented an initial stage of tuberculosis. The diet and appetite are to be regulated, an abundance of fresh air and sunlight counseled, and patients should be recommended to limit trying indoor occupations as much as possible or to give up for a time exhausting physical labor. Of course, all this is for the well-to-do rather than the poor, but it represents the ideal of prophylaxis and therapeutics at a very early stage. In a word, the present idea among physicians is not to conceal the existence of tuberculosis from the patient as long as possible, as used to be done, but rather to warn the patient very early in the disease, perhaps even in the pretuberculous stage, and so arouse the reactive vitality of the system before it has been impaired by serious pathological conditions.

## ECHOES AND NEWS.

### NEW YORK.

**Reception to St. Luke's House Physicians.**—Dr. Beverley Robinson gave a private smoker last Saturday, February 1st, to the house physicians of St. Luke's Hospital who had served directly as house physicians under him. Dr. Robinson was made the recipient of a silver loving-cup.

**City Isolating Consumptives.**—Charities Commissioner Folks has ordered that all patients in the city's hospitals suffering from consumption be transferred to the new phthisis hospital on Blackwell's Island and that all such cases in the future be sent there for treatment. About thirty consumptive patients have already been removed from Bellevue. Those remaining will be removed as rapidly as possible. It is expected that the change will greatly lessen the death-rate in the city hospitals. The new hospital will shelter about 120 patients and two other buildings are in process of alteration. These will bring the total accommodation up to 350.

**The Office of Coroner.**—In New York City a growing disposition has recently arisen to question the further usefulness of this time-honored official. It is with no small show of reason contended that with the present administrative machinery the duties which usually devolve upon his office could be better performed in other municipal departments.

**Bovine Tuberculosis.**—At the meeting of the New York State Medical Society last week that body received from its Legislative Committee a recommendation that the questions involved in Dr. Koch's paper at the London Tuberculosis Congress upon the communicability of bovine tuberculosis invited further experiments in this field before any conclusions could be drawn that would modify existing methods for dealing with the disease. The recommendation was also made that local boards of health be requested to follow the work of the Milk Committee of the New York County Medical Society in the efforts made to protect that commodity. The Committee's report also favored indorsing the movement for the establishment of a National health board with a representative in the President's Cabinet.

**Damages to the Manhattan Eye and Ear Hospital.**—No building in the vicinity of the recent explosion which occurred in the construction of the Subway suffered more than the Manhattan Eye and Ear Hospital. Practically all of the glass in the building was shattered, most of the plaster was ruined and much of the woodwork and ornamental coping in its front was dislodged or broken. It is now reported that the building inspectors have declared the institution unsafe for occupation at present. The Managers have displayed remarkable courage and energy in their efforts to repair the damages and restore the hospital as rapidly as possible to its normal condition. No similar charity is of more benefit to the city and every assistance in rehabilitating the institution should be extended to its management.

### PHILADELPHIA.

**Hospital for Mt. Pocono.**—A Women's Auxiliary of the Pocono Protective Health Association has been formed with Mrs. William R. Fisher as president. The objects of the Association are the erection, equipment, and maintenance of a small hospital building for emergency cases in the immediate vicinity, for either residents or summer patients and guests. Treatment will not be free. Work on the building will probably be begun in the spring.

**Large Increase in Typhoid Cases.**—For the week ending February 1st there were reported 201 cases of

typhoid fever and 21 deaths, an increase of 84 cases over the previous week. Only six wards in the city are free from the disease, the West Philadelphia wards, as last week, showing the larger number of cases. The one explanation for the increase in cases and deaths is given by the Bureau of Health as polluted drinking water; the one safeguard is to boil the water. Circulars insisting on the latter precaution are being distributed.

**Camden Charities Imposed Upon.**—Managers of the Cooper Hospital and the Camden City Dispensary have lately made an investigation of the circumstances of applicants for free treatment at those institutions. A twenty-day examination showed that of eighty cases applying at the hospital, twenty were in a position to pay for treatment and of ninety-six cases at the dispensary thirty should have been debarred from free assistance. The investigation is the first step toward preventing such imposition.

**Dr. Hare's Unpleasant Experience.**—Dr. Hobart A. Hare had a few hours' unpleasant experience during the past week as the result of a mistake made by a zealous member of the police force. Dr. Hare, accompanied by an expert, was testing a new automobile and while on South Broad Street was preceded by another party who exceeded the required limit of speed. On his return the doctor was placed under arrest as the offending party, taken to Moyamensing Prison and conducted to a cell after being refused telephonic communication with his family and counsel. Friends soon after secured his release. An investigation now being conducted is likely to result disastrously for the officers responsible for the indignity.

**Death of Dr. Charles H. Burnett.**—Dr. Charles H. Burnett, the distinguished aurist, died at his residence in Bryn Mawr, January 29th, of pneumonia. Dr. Burnett was sixty years of age, a native of this city, and a graduate of the Medical Department of the University of Pennsylvania, the degrees of A.B. and A.M. having been taken at Yale. He served as a resident at the Episcopal Hospital in Philadelphia and later studied optics and diseases of the ear in Vienna. He was a member of various medical societies in Philadelphia and professor of otology at the Philadelphia Polyclinic and School for Graduates. Dr. Burnett edited an encyclopedia of diseases of the ear, nose and throat, and last year completed a text-book on diseases of the ear.

**Meeting of Antivivisection Society.**—The American Antivivisection Society held its nineteenth annual meeting in this city January 30th. The President, Dr. Matthew Woods, was re-elected. The President, in giving an account of vivisectional experiments which he claimed were to be found in nearly every medical periodical, mentioned the connection of hydrophobia with them. He stated that he had been looking for twenty-five years for a true case of hydrophobia and as yet had not found it. Neither had he found a physician who had seen a genuine case. The Society states that it is important that the public mind should be disabused of the popular fallacy that hydrophobia is a common disease.

**"Cut-Rate" Druggist is Upheld.**—The question whether or not the maker of a proprietary medicine can impose upon a purchaser a contract determining its price and thus prevent "cut-rate" selling, recently came up for argument in Common Pleas Court. The suit was brought against a local druggist by Julius Garst of Worcester, Mass., who sued for $105, a fine of $21 for each offense. The Court holds that it will not recognize a condition on a package of medicine providing for its sale at not less than a stated price. There is no averment that the defendant ever agreed to the terms of the notice. The plaintiff by printing a notice on the box attempts to make a contract with each person accepting a box, whether that person assents to it or not. The opinion is that the notice on the box has no contractual power whatever.

**Serious Accident to Physician.**—Dr. Raymond J. Harris, a demonstrator in chemistry at Hahnemann College, was possibly fatally injured February 1st as the result of a collision between his carriage and a hook and ladder truck. A fracture of the skull was sustained and, although the last reports are favorable, his chances for recovery are considered slight.

**Removal of Superior Cervical Ganglion of the Sympathetic.**—At the Jefferson Hospital Clinic, February 1st, the left superior cervical ganglion of the sympathetic nerve was removed from a patient by Dr. W. Joseph Hearn assisted by Dr. J. Chalmers DaCosta. The man is a patient of Dr. George E. De Schweinitz and has been suffering for some time from chronic glaucoma. The right ganglion was removed at the Philadelphia Hospital by the same operators on December 20th. While no distinct improvement in the corresponding eye has been noticed, the process has apparently, been stopped and the eye is getting no worse at least. So far as known these are the first operations of the kind done in this city.

**Many Bequests to Charity.**—By the will of the late J. Alfred Kay many hospitals are the subjects of substantial bequests. Among these are $5,000 each to the Pennsylvania, Germantown, University, Jefferson, Orthopedic and Polyclinic Hospitals. The codicil also gives $1,000 each to St. Agnes', St. Joseph's, Jewish, Hahnemann, Presbyterian, German, Children's, Howard, Medico-Chirurgical, and Gynecean Hospitals and to a number of homes for the blind, etc.

**Philadelphia Neurological Society.**—At the monthly meeting, held January 28th, Dr. William G. Spiller exhibited a case of paralysis of the face and upper and lower limbs on the right side and of the tongue and muscles of mastication on the left side. The patient had been in fairly good health until one year ago, although she had had three miscarriages. The attack was preceded by drowsiness and headache. The lesion was supposed to be specific in nature. Dr. Spiller stated that he had noticed paralysis of the muscles of mastication in three cases of hemiplegia. He also exhibited a patient to illustrate tests for differentiating between true hemiplegia and malingering or hysteria. One is the contracture of the anterior tibial muscle when the thigh and leg are flexed, the phenomenon being caused by the contraction of the iliopsoas muscle. Another is the extension of the great toe when the leg is raised, this indicating impairment of the motor tract.

Dr. M. H. Bochroch exhibited a patient showing superior tabes. The history and condition of the case suggested paresis with beginning tabes of the cord.

Dr. Charles S. Potts exhibited a case of progressive muscular atrophy (Aran-Ducheame type) in which the atrophy began in the extensors of the hand and fingers.

Drs. A. P. Francine and D. J. McCarthy exhibited a case of facial tic in which each contraction is followed by complete paralysis in the facial and hypoglossal distribution on the same side. Discussion of the case led to the general conclusion that the lesion was a small cortical one in the facial area.

Dr. F. Savary Pearce reported a case of poliomyelitis with increased knee-jerk.

Dr. A. Buckley, by invitation, read a paper entitled "Carcinoma of the Spine, with Autopsy" and showed microscopical specimens.

**Academy of Surgery of Philadelphia.**—At the meeting of February 3d, Dr. De Forest Willard showed

a case of intestinal anthrax reported at the last meeting.

Dr. Edward Martin read a paper on Intestinal Suture.

Dr. G. G. Davis read a paper describing the radical cure of hemorrhoids without general anesthesia. The operation is done by the cautery under cocaine anesthesia. The diseased area is exposed by a speculum, preferably the Kelly instrument, and cotton saturated with a four-per-cent. solution of cocaine introduced. The tube is withdrawn, leaving the cotton in place. After a short interval the cautery knife is used, puncturing, burning superficially, or deeply as desired, being careful not to get too high up, thus avoiding hemorrhage. Another plug of cotton is introduced and left in until passed with the first bowel movement. Only one portion of the hemorrhoids is removed at a time, the others following at intervals of at least a week. Dr. W. L. Rodman spoke of a case recently operated upon by him, the man refusing to take anesthetics of any sort and standing the operation very well. Speaking of the danger of general anesthetics in rectal cases he stated that operations on the rectum, genitalia, or matrices of nails require the third degree of anesthesia to abolish sensibility. This made them more dangerous than other more important operations for which only the second degree of anesthesia is needed.

## CHICAGO.

**X-ray Machine for Cook County Hospital.**—To facilitate the work of the Cook County Hospital medical and surgical staffs, Warden Healy has ordered the purchase of an X-ray machine for that institution. The X-ray machine will not cost less than $550.00.

**For a Children's Hospital.**—A subscription dance will be given February 5th, the proceeds to be used toward building a hospital for sick children in connection with St. Joseph's Orphan Asylum.

**Insane of the City.**—During the year 1901 the detention hospital received 1,503 patients, who were distributed as follows: Cook County Asylum, Dunning, 667; Illinois Northern Hospital, Elgin, 293; and Illinois Eastern Hospital, 166. The remainder, about one-third, were discharged.

**Exclusive Medical College for Women.**—Will Chicago have a high-grade medical college solely for the instruction of female students? This question, based on rumors of plans of founding such an institution by the Alumni of Northwestern University, has deeply stirred the medical and college circles of the city. It is thought that Dr. Eliza H. Root, Dean of the Woman's Medical School of the Northwestern University, which has just been sold, is at the head of a movement to organize such a school. Associated with her in the planning of it are reported to be Mrs. E. L. MacEwen, Mrs. John Ridlon (wife of the noted orthopedic surgeon), and Mrs. Martha F. Crowe, all of Evanston. Plans and ideas in connection with the proposed school have been talked over. It is said that the Alumni were unanimously of the opinion that they should keep together and in their unity is seen a powerful factor for the support of the school if it is founded. The question now comes up in connection with the opening of Rush College to women and the permanent coëducative feature of the College of Physicians and Surgeons, Will the Northwestern admit women to its medical school, or will it throw out coëducation altogether and be the great university for men only of the West? These questions are declared by physicians who are watching the checkerboard of educational enterprise to be paramount issues, affecting the status of Western women in regard to opportunities for learning and having a marked influence on the suffrage question itself.

**Chicago Health Department.**—An effort in preventive medicine on a scale of considerable magnitude was inaugurated last week by the City Health Department. Its field is an area of some 600,000 square miles of territory in the ten States of which Illinois is the southern center and the remotest boundaries of which are within a few hours' railway travel of Chicago. Among the 25 millions of people living in this area the number of cases of smallpox has increased more than 900 per cent. since the first of the year, over the number reported during the corresponding period of 1901. That is to say, between December 28, 1900, and January 24, 1901, there were only 1,070 smallpox cases reported in this territory while during the similar period ending January 24, 1902, there were 10,820 cases reported—an increase of 911 per cent. Authentic information, gathered by wire and mail, from State and local health authorities and from personal investigation by the contagious-disease experts of the Department—sent to a number of infected localities most directly menacing Chicago—convinced the Health Commissioner, Dr. Reynolds, that the disease is still spreading unchecked, that it is not being fought intelligently or adequately, and that its continuance seriously threatens not only the public health, but the material interests of this vast area by the certainty of "shot-gun quarantines" sooner or later and consequent costly and vexatious interference with travel and traffic. These views were presented at a conference with the representatives of the leading railways centering in Chicago and their coöperation with the Department was urged in a concerted effort to "stamp out" the pestilence. Ready assent was given, the necessary men and means were assured and it is confidently believed that the situation will be well in hand within a fortnight after operations are begun. The plan contemplated wholesale vaccination and revaccination in every infected locality; the provision and maintenance of suitable isolation hospitals where necessary; thorough disinfection of smallpox premises and belongings; strict inspection of all persons offering to travel from infected localities and refusal to carry those who do not comply with the requirements. This is the measure relied on to control the objectors, "conscientious" or otherwise, and is one fully within the power of the railways to enforce. Special attention will be paid to the condition of employees in manufacturing establishments—particularly those of textile fabrics—and the railways will set the example by still more rigorously making recent vaccination a condition of further employment. Competent vaccinators and supplies of pure, tested vaccine lymph will be furnished gratis in all proper cases. The work along each railway line will be under the direct charge of the medical director or chief surgeon of the company and a central office will be maintained in the city for the receipt of reports, requisitions, etc., from those engaged in the campaign. Dr. Reynolds has volunteered to take charge of the central office. This action is not taken solely or even chiefly in the interest of Chicago. The situation here has never been alarming at any time during the three years of the epidemic and at the close of last week there were but 21 smallpox cases in the Isolation Hospital—5 having been received and 7 discharged during the week.

There was an increase of 37 in the number of deaths last week over those of the week before—chiefly from the acute intestinal, heart and nervous diseases and from consumption, penumonia and scarlet fever. Influenza is still very prevalent and, although of a mild type in itself, it mischievously and often fatally complicates many other maladies. It is feared that the cur-

rent month will not make as good a record as January, when the total deaths, 2,229, furnished a midwinter death rate of only 14.42 per thousand of population, or nearly four (3.9) per cent. less than the rate of January, 1901.

## CANADA.

**Deserting Her First Love.**—Princess Sophie Bamba Dhuleep Singh, daughter of the Maharajah of Lahore, India, is leaving the Northwestern Women's Medical College, Chicago, where she has been a student in medicine and will throw in her lot with the Women's Medical College, Toronto.

**Fever Following Smallpox.**—While the unorganized districts of Ontario are becoming cleared of smallpox the pest is securing a firmer hold upon the settled and older districts of the Province. Scarlet fever and diphtheria are raging in the lumber camps to the north where the smallpox has been prevalent. Both diseases seem to be of a very malignant type.

**County Health Inspectors.**—The attention of the Ontario Legislature is being called to the Medical Health Act with a view to securing amendments thereto which will provide for the appointment of county instead of township medical officers of health. At present each township appoints its own health officer at the nominal salary of $50 to $100 per annum and very often the duties of these officers are perfunctorily performed. Better service could no doubt be secured if county officers were appointed with an adequate salary.

**Notices in Hospitals for Pay Patients.**—During the past week a Toronto physician has been seeking to recover from the executors of an estate the amount of his bill for services rendered a patient during the lifetime of the latter. The executors refused to pay on the ground that the physician was on the junior staff of the hospital at the time the services were rendered in the hospital. The judge, who was on record before in this matter of charging hospital patients, stated it would be wise and fair for the hospital authorities to post up notices in all such institutions stating the conditions under which patients are charged for doctors' attendance. The suggestion seems to be a good one.

**Blackmailing Doctors in Toronto.**—Two Toronto physicians have been subjected to what the Crown Attorney states to be nothing more nor less than attempts at blackmail. One doctor was called to attend a citizen's wife and another, a specialist in diseases of children, to look after the health of the child of a family, which had recently arrived here from New York. In both cases the doctors were held up by the husband on account of alleged insults to the virtue of his wife. The former doctor laid a trap and caught his would-be blackmailer; the second gave him the option of walking out of his office or being thrown out. The case is being ventilated in the Police Court.

**Hospital Quarantined.**—Smallpox of a mild type appears to be spreading in Montreal, and it is quite a common occurrence for people to be walking in to the Health Department afflicted with the disease. Notre Dame Hospital has been quarantined, one of the servants having been attacked by the disease. There are two hundred patients in the hospital at the present time and they will have to stay there until February 12th.

**Southwestern Manitoba Medical Association.**—This Association was organized only a few months ago and out of the seventy available medical men in that section sixty-seven have already become members and it is expected the others will do so shortly. An effort is to be made to organize the whole profession in the Province of Manitoba. A new tariff for insurance companies and lodge work has been agreed upon and every member of the Association has signed a pledge binding them to this tariff from January 1, 1902. Fraternal societies with insurance will be charged $3.00 per examination; insurance companies, $5.00. A provisional tariff of fees has also been arranged to which all will adhere as closely as possible. The members of the Association have also decided to render statements of accounts at least quarterly. The Association discourages lodge practice.

**Samaritan Hospital, Montreal.**—There are fourteen patients in this hospital at the present time, of whom eight are being treated free. Dr. Leslie Allan of Point St. Charles has been promoted to be chief anesthetist in place of Dr. Leprohon, resigned, and Dr. F. W. Harvey has been appointed assistant anesthetist to succeed Dr. Allan.

**Penitentiary Hospitals.**—The Inspector of Canadian penitentiaries has handed in his report to the Minister of Justice for the past year. On June 3d last the population of these institutions throughout Canada numbered 382 as compared with 1,424 on the same date in the previous year. There were twenty-three deaths during the year. Referring to the St. Vincent de Paul Penitentiary, the Inspector reports that during the year one hundred and fifty pounds of tincture of opium and about ten thousands morphine pellets passed through the dispensary. This fact gives reasonable ground for the opinion that the administration of this department of the prison is characterized by imprudence and extravagance. The health of the convicts in this institution has not been considered at all satisfactory, and it is thought to be traceable to the overdrugging with opiates.

## GENERAL.

**Smallpox in London.**—A recrudescense of London's smallpox epidemic was apparent last week when 71 cases were reported in one day.

**Academic Honors.**—Professor Kossel, who holds the chair of physiology at Heidelberg, has been elected a member of the Stockholm Academy of Sciences.

**Medical School for Indo-China.**—The government of Indo-China has decided to establish a medical school at Hanoi. The direction of the school will be entrusted to Dr. Yersin, who will have two assistants.

**Bacteria on Money.**—Dr. Vincent, through bacteriological investigations made at the "Hôpital du Bey at Algiers, has found that almost all varieties of bacteria occur upon currency, but most common are the germs of suppuration. Bacteria are, however, comparatively short-lived upon metal currency, the metal having a certain antiseptic effect; the action of gold is less marked in this respect than other metals. The bacillus typhosus will live for from five to seven days upon a gold piece, but dies in less than eighteen hours upon other metals.

**First Sicilian Medical Congress.**—This Congress will be held at Palermo in April, 1902.

**French Scientist's Discovery.**—At a meeting of the National Society of Physicians at Lyons, Dr. Lepine announced that he had isolated from the urine of pneumonic patients a crystallizable substance, the study of which he believes will give the key to the pathogenesis of diabetes. This substance *in vitro* prevents glycolysis in the blood, so that, if it is not eliminated or destroyed the blood becomes surcharged with glucose. The theory advanced is that although in pneumonic patients this substance is eliminated, normally it is destroyed by the pancreas; hence the pancreas does not elaborate a glycolytic substance, but in its normal state destroys an antiglycolytic substance which is always present in the blood.

**Consolidation of Medical Journals.**—An event significant of the tendencies of the time has just occurred in Cleveland. Plans for the amalgamation of

the "Cleveland Journal of Medicine" and the "Cleveland Medical Gazette" have been brought to a successful issue. On January 20, 1902, was held the organization meeting of the "Cleveland Medical Journal" Company, which is composed of those physicians now interested in the two old journals, together with a good proportion of the representative physicians of Cleveland, numbering in all 45 stockholders. At a considerable sacrifice on all hands the two old journals have been transferred in their entirety to the new company that will publish the "Cleveland Medical Journal," which is to be an independent and free professional institution conducted for the good of the medical community with no idea upon the part of the stockholders that they shall ever look for dividends. At this meeting a temporary organization was formed, consisting of Dr. Marcus Rosenwasser, President; Dr. William E. Bruner, Secretary; Dr. Joseph F. Hobson, Treasurer. Dr. P. Maxwell Foshay was elected editor and Dr. Edward S. Lauder associate editor.

**Hydrological, Climatological and Geological Congress.**—This Congress will be held at Grenoble, France, in October, 1902. Among the subjects to be discussed are: Action of Mineral Waters on the Tissues; Hydro-Mineral Treatment of Phthisis, of Diseases of the Stomach and of the Skin; Bacteriological and Chemical Examination of Mineral Waters; Influence of Heat, Cold, and Altitude upon Respiration; Necessary Meteorological Conditions in the Establishment of Sanatoria; Open and Closed Sanatoria.

**Another Million for Harvard Medical School.**—Last June J. Pierpont Morgan agreed to erect, at a cost of more than $1,000,000, three of the buildings required for the accommodation of the Harvard Medical School. President Eliot recently announced to the Medical Faculty that John D. Rockefeller proposed to give $1,000,000 in furtherance of the same project, provided other friends of the University would raise a sum of money in the neighborhood of $500,000, to be used by the medical school for land, buildings, or endowment. It was stated that this condition would doubtless be speedily complied with. Since the announcement that Mr. Morgan was to erect three of the buildings the plans of the architects have called for two additional laboratory buildings, and a considerable fund is also needed to provide for the increased running expenses of the school. It is therefore especially gratifying that Mr. Rockefeller's gift makes it possible to complete the plan which will give this country a great medical university, equal and in many respects superior to any at present existing in the world. It was largely through Dr. W. B. Coley of New York that the gift was made. He laid before Mr. Rockefeller the urgent needs of the university, and it was he who notified the Medical Faculty and President Eliot of the gift.

**Dr. Trudeau in Florida.**—Dr. E. L. Trudeau of Saranac Lake, N. Y., is now at Palm Beach, Fla., where he will remain for several weeks to enjoy the climatic contrasts to the Adirondacks.

**Syracuse Hospital.**—At the opening exercises of the new Hospital of the Good Shepherd in Syracuse on February 5th, it was announced that through the goodness of Mr. W. B. Cogswell the Hospital would receive one hundred thousand dollars in cash. It had also been arranged by Mr. Cogswell that the interest on another hundred thousand dollars borrowed would be paid. This money will be expended in enlarging the hospital.

**The League of Human Life.**—The lay press of Paris, France, led by the "Matin," has undertaken an apparently much-needed reform in sanitary matters. First, the water supply said to have been derived from the polluted Seine was attacked; later the adulteration and manufacture of drugged wine was investigated, and now the pure-milk question is to receive attention. The "Matin" announces its intention of forming a league, to be called the League of Human Life, the object of which will be to analyze the milk brought to it by its members and to prosecute in the name of the league any and every milk dealer thus discovered to be dealing in impure milk. Already it has secured the support of many of its readers, and it will not be long before the league will be ready for business, when for the first time in its history, perhaps, certainly for many generations, the French capital will be on the way to a supply of milk as it comes from the cow. Now that a start has been made, it is expected that the newspapers of other cities will enter into the new field of usefulness opened to them.

**The New Lunacy Bill for New York.**—On Wednesday the bill that proposes among its other retrograde provisions to wrest the management of the State Hospitals for the Insane from the authority of the present local boards passed the State Senate by a vote of 31 to 18. On the same date but previous to the legislative action, President George F. Canfield of the State Charities Aid Association sent the following telegram to Gov. Odell:

"In behalf of the State Charities Aid Association and Committee of Twenty, representing charitable organizations of city and State, I respectfully request that hearing be granted before you affix your signature to Lunacy Bill, should it reach you, with one week's notice of date of said hearing."

Since this bill has received the continuous support of the Governor, it is scarcely probable that he will long refrain from making it a law.

## OBITUARY.

### John T. Metcalfe, M.D.

On the 30th of January, 1902, Dr. John T. Metcalfe, for many years a medical practitioner of great eminence in the city of New York, departed this life in the eighty-fourth year of his age in the city of Thomasville, Ga.

He was born in Natchez, Miss., was the eldest child of Dr. Metcalfe, who in early life was a practitioner of medicine and in later years a planter, living upon the plantation known as Montrose, lying upon the banks of the Mississippi not far from the city of Natchez.

Arrived at the appropriate age, the subject of this sketch entered the Military Academy at West Point, graduated with distinction, and served as lieutenant of ordnance during the war with the Seminole Indians, who, having retreated to the Everglades of Florida, made a determined resistance to the authority of the United States. Exposure to the malarial influences of Southern Florida affected his health very badly, and influenced either by this fact or by a distaste for the life, he resigned from the army and commenced the study of medicine, for which he had had, even from his boyhood, a decided fancy.

Graduating from the University of Pennsylvania, that grand old school which so many eminent physicians throughout the United States have proudly hailed as Alma Mater, he went to Europe and studied in the schools of France, Germany, England, and more especially of Scotland. Returning to this country, he came to New York and married Augusta, a daughter of Christopher Collis of that city and began the practice of medicine.

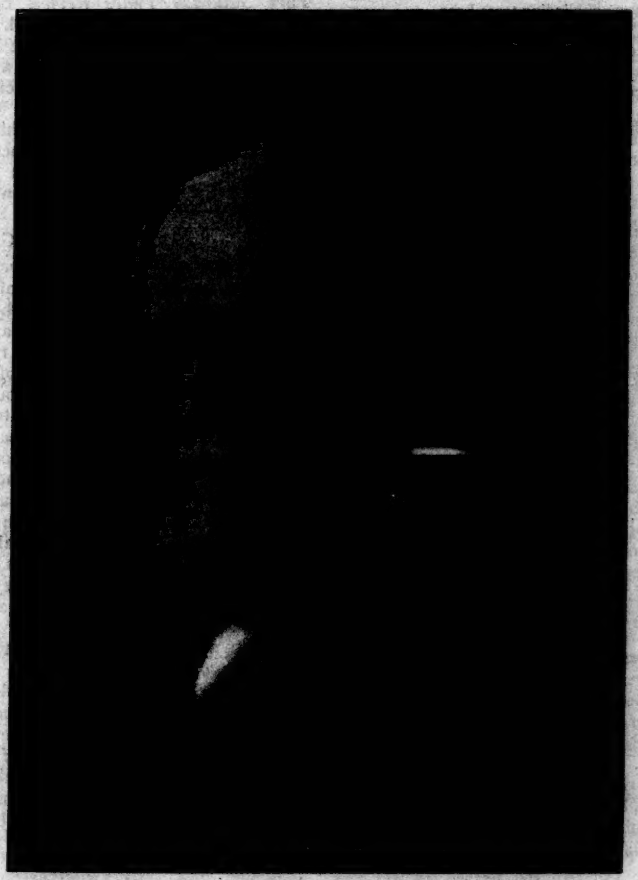
Nothing could have exceeded the kindness and cordiality of his reception by the physicians of the city of his choice. He was received with open arms by its

representative practitioners, such as F. U. Johnston, Alonzo Clark, Parker, Delafield, Markoe, his old army chum, William H. VanBuren, and many others, whose kind interest soon put him in possession of a promising practice.

On his side he was possessed of so many personal advantages which increased the inherent value of those put at his disposal by his friends that there was no wonder that a brilliant, rapid, and most gratifying success declared itself in his favor. His personal appearance was most attractive, his manner most engaging and captivating, his conversational powers quite remarkable, and his education, both general and professional, of the highest type within the reach of the men of that time. He spoke French so fluently that it was always the language of his household; he was quite familiar with German and to a more limited extent was acquainted with Italian. Add to these advantages in social life the fact that his kindness of heart and thoroughness of medical education united in making an able and attractive physician, and one is prepared to accept the result, one of the largest and wealthiest practices, after a very short period of waiting, that New York has ever known.

He soon became professor of the institutes and practice of medicine in the University Medical College, physician to Bellevue Hospital and consulting physician to institutions too numerous to mention.

Men of experience always suspect such sudden and brilliant successes as having within them the elements which insure early decay. But Metcalfe's career belied such ill-omened suspicions and such gloomy prophecies. His sudden and rapid success was sustained by true merit, strict honesty of purpose, and the possession of traits of character which endeared him to all who knew him. "Never," it has been declared over and over again by those who were honored with his intimacy, "have we ever met with any one who possessed such hosts of frends and so small a number of enemies."



JOHN T. METCALF, M.D.

But there were two sad influences which gradually worked against him and in time cut short his wonderfully brilliant career. Within a few years he lost a wife upon whom he leaned for counsel, for happiness and for comfort. Then the hand of death removed, one after the other, six out of seven children; some of them in early life, some after marriage. Later in life he married Susan, the daughter of William Whitlock of New York, but after comparatively few years of married life she too was taken from him. None but those familiar with the tender, gentle, affectionate heart of the man could appreciate the nature and degree of his suffering. Had not God in His mercy left him a de-

voted son, who, relinquishing his career in the United States Army, has spent his life in ministering to him, no one could have predicted the result.

Then his health entirely failed him; he became a terrible sufferer from the worst form of gout; and in about his sixtieth year he was forced to give up a profession of which he was so brilliant an ornament, upon which he shed such luster, and in which he was able to do so much of good, both for patients and for brother practitioners.

The theme is so fascinating a one to him who writes these lines that he is obliged to force himself to come to a conclusion, although dissatisfied with the brevity and insufficiency of this short and imperfect sketch.

"Lo! through a storm of blinding tears I see
The rainbow vision of his noble life:
True heart! brave soul! Ye are not dead to me,
But live to hold God's beacon in the strife!"

—T. G. T.

## BYWAYS OF MEDICAL LITERATURE.

### Prophylaxis of the Sequelæ of "Wild Oats."

Family physicians are often approached by fond mothers with the idea that they may be able to provide suggestions by which the sons of wealthy families may be kept from the health-destructive influences liable to follow a crop of wild oats too injudiciously sown. The suggestion of an editorial writer in the *New York Independent* for December 26, 1901, may prove helpful to physicians in this matter. He recommends "dissipation by machinery." He says that M. Santos-Dumont showed originality by racing an airship around the Eiffel Tower instead of racing horses in the Bois de Boulogne. This is a new form of dissipation which, on account of its comparative innocuousness and possible benefits, may be commended to the attention of gilded youth everywhere. Balloon racing over the sea and land is likely to become fashionable among young men who have the spirit of adventure and the money to back it. The era of aero-automobolism can not be developed unless somebody puts a good deal more energy and money into it than is going to pay. And as for danger, well, science must have its martyrs and a community can spare the idle sons of rich men as well as any other class.

"The example of the Duke of the Abruzzi in sowing his wild oats in 86 degrees 33 minutes north latitude, instead of in Vienna or Paris, is well worth the attention of royal families. How much better it would have been for Edward VII. if he had spent his lengthy adolescence in the Arctic regions instead of at house parties in Merrie England. There is so little for princes to do nowadays that it would be well to keep them in cold storage, safe from anarchists and actresses, until they are needed."

These suggestions will surely be of prophylactic importance for the sons of our millionaire kings of finance, commercial potentates, coal barons, etc. No higher object in life than the development of applied science could well be imagined. The taste for this sort of thing is expensive, but not more so than a taste for exploiting the virgin forests of the vaudeville stage, and it is physically much less dangerous. Besides, there is an air of distinction about scientific experiment, due to the fact that but few have entered the field, that should prove a powerful source of encouragement.

### Curious Transformation of Medical Terms.

There are some very interesting reflections on the changes in signification that medical terms have undergone during the course of centuries, in a recent philological work called "Words and Their Ways in English Speech." The word treacle, for instance, which was formerly a medical term, but now means only a syrup, is a typical example of word transformation. Treacle is derived from the Greek, theriakon, which means pertaining to a wild beast. From this it came to mean a remedy for the bite of a wild beast, then its signification broadened to that of antidote for anything harmful. Finally, its signification developed to that of a remedy of any kind; as most of the old remedies were syrups, the modified theriakon, that is, treacle, came to mean simply a syrup. In the sense of remedy treacle occurs in a well-known passage of Chaucer, who speaks of the Lord as the "treacle of every harm," that is, a sovereign remedy for every grief. A writer in the *New York Saturday Times Review* calls attention to the fact that the authors of the book might have well referred here to the famous Treacle Bible, which obtained its name from its rendering of a well-known passage as follows: "Is there no treacle in Gilead?" The modern word balm, also, by the way, a medical term, has come to replace treacle in this passage, though its philology does not give it a much better right to the place. It is only a modification of the word balsam, originally the pitchy product or inspissated sap of trees or plants.

### The Pathology of Gambling.

A recent work by a very well-known Italian authoress is really a clinical study of the pathological side of the gambler's life. The book "The Land of Cockayne," by Matilda Serao, is a study of local conditions in Naples, the birthplace of the talented authoress. All the essential unhealthiness of the mental state of the gambler's mind is brought out. People of every condition of life, from the lowest to the highest, are represented as the victims of the passion. It is evident that any true reasonableness is not present in the great majority of those whose life tragedy it brings about. We have come to acknowledge that the man who thinks he has attained perpetual motion is not sane. Some time there will be just as general an acknowledgment that the man who thinks he has found a way to beat the game, a new and ingenious system by which he is sure to win from professional gamblers, is not in his right mind. The delusion that it is possible to best the gamblers at their own game or that somehow luck is bound to come sooner or later, is one of the most common in our modern life. It replaces many of the superstitions that we condemn so heartily in former generations. Not all of these superstitions are extinct, however, and one of the merits of Matilda Serao's book is that she shows how the gambler's mind is attuned also to the reception of any form of superstition that may with even far-fetched plausibility seem to promise luck.

Undoubtedly a time will come when it will be realized that a man under the influence of an uncontrollable passion for gambling is as much a sufferer from mental disequilibration as a sufferer from any other form of irrational emotivity. The medical profession are agreed that the habitual inebriate needs to be put under control for his own benefit. Our law-making is trending in this direction in many States. The gambling habit will come to be recognized as the result of an imperative impulse of the same nature for which not calm reasoning but positive control is required. The realistic treatment of such a theme is a distinct popular medical document, for it hastens the foundation of a healthy public opinion in the matter.

### The Nobel Foundations and Awards.

The recent award of the Nobel prizes for the first time arouses curiosity in the man and his work. There

is an informing article on him in the *Westminster Review* for December. Nearly every one knows the paradox of his career. He spent his life in making high-grade explosives and incidentally accumulated a fortune of $10,000,000. At his death he willed the income of this ten millions of dollars to be given mainly for prizes that are to promote the interests of peace. One of the prizes is to be given every five years to the man or the Society that has done most to promote universal peace among the nations. The other prizes are given, as is known, for the greatest recent discoveries in medicine, in physics and in chemistry and for the most significant work in literature.

Nobel's was a dominant personality. As the result of his life work, the writer of the article in the *Westminster Review* says, the Swedes as a nation have come to take a special interest in the manufacture of explosives. "Just as a German student devotes his chief attention to bacteriology, or an English chemist to mineralogy, so will a Swede make the science of explosives his primary study."

The writer insists that the clauses in Nobel's will are no real irony upon his actions during his life-time. Like a surgeon of daring he sought to excise the cancer of war by using the most dangerous instruments, since none other could be effectual. The arrangements made for the distribution of the prizes seemed to be the best possible to secure absolute impartiality. In this Nobel's business instincts and habits are especially observable. The awards of the prizes for the first time have given universal satisfaction, with the possible exception of that to Professor Behring for the greatest recent discovery in medicine. There are many who think that Professor Behring's position in securing a patent on his invention in order to reap the benefit of it for himself should preclude him from award for humanitarian advances made. Perhaps, in the light of certain recent accidents with diphtheria serum, Professor Behring's own plea in this matter will be listened to with more attention than formerly. He has always insisted that his only object in securing the patent on diphtheria serum was to prevent the putting on the market of inferior and perhaps harmful products out of which the conscienceless would make large amounts of money, while the development of the great idea underlying antitoxin would be delayed perhaps for many years.

## CORRESPONDENCE.

### TRANSACTIONS OF FOREIGN SOCIETIES.

German.

MEDICINAL SEDATIVES IN DISEASES OF THE NERVOUS SYSTEM—LEGAL PUNISHMENTS AND PSYCHIATRY—UNUSUAL FORMS OF PARALYSIS—ANGINA, RHEUMATISM AND ERYTHEMA NODOSUM—MEDICAL AND SURGICAL CONDITIONS IN PEKIN.

KREUSER (Schussenried), at the thirty-second annual congress of the Southwestern German Neurologists and Psychiatrists, read a paper on the value of medicinal sedatives in the treatment of diseases of the mind. After a short review of the recent developmental process in the treatment of diseases of the mind, with a special view to the causes of the disease within the nervous system itself, he endeavored to draw an analogy and to show, from the results of physiological experiments as to the signs and time of exhaustion, at what period medical aid should be given in order to be of value. Of the ordinarily employed means to this end, in addition to ordinary attention to the fundamental principles of psychiatry, the best and foremost means of treatment are rest in bed and the better methods of hydrotherapy. In addition to this, however, there are other means which are available and among them certain drugs may be used, although some of them are possessed of distinct danger. With these limitations in view the most serviceable drugs are alcohol, the preparations of bromine, of opium, chloral hydrate, amylene hydrate (dormiol), paraldehyde, hedonal, sulphonal, trional and hyoscine (scopolamine). Each of these drugs has its own indications, contraindications and dangers which as a rule are learned only after familiarity through use.

FRANK (Minsterlingen in Switzerland) read a communication on the relations between the ordinary court sentences and the mental condition of criminals. The meager knowledge of judges and lawmakers in the field of diseases of the mind and nervous system is really a menace, in his opinion, to the interests of mankind. To put the question otherwise, for example, the Court has little reference to the mental condition of the offender in passing sentence; the mental and nervous health of the prisoner demands some attention. Relief may come from the side of psychiatrists who may by degrees correct this ignorance in the minds of the jurists. In the first place some of the methods of cross-examination followed in courts demand criticism. The dictum which is usually followed in Germany that, before sentence is passed on a certain class of criminals, examination must be made of their mental capacity, is unfortunately not followed in all commonwealths. Frank claims that the court doctors are not as a rule capable of deciding these questions properly. The examination of such patients as a rule demands methods which are natural gifts or personal acquisitions. Through proper examination it may even be established what the motive of the crime probably was. Moreover, it may be established, with due care and attention, how the criminal came to break laws, what was his mental attitude in the matter and under what external influences he labored. After sentence the criminal simply works out his time and is silent. There is no trace of an effort to treat each individual as such. After his sentence is ended no one is interested in his well-being; he departs and begins life anew. The legal formalities are again gone through with perhaps thirty or forty times or oftener in the name of the sovereign and law and also according to precedent. A fundamental psychiatric knowledge on the part of the jurists would be a new field of labor which might be called criminal sociology or criminal biology. Such would probably be interesting and fruitful. Without this knowledge the State is not in a position to protect in the fullest sense of the word the life, health and property of each person. Frank, therefore, demands a practical course in psychiatry for lawyers and lawmakers. Moreover, at the time of examination due attention must be paid to the number and quality of the psychiatrists.

ALZHEIMER (Frankfort-on-the-Main) said that Lissaur has distinguished a typical and an atypical form of paralysis in one of his works recently edited. What he calls his typical form of paralysis embraces perhaps 80 per cent. of all paralyzed individuals. It is clinically distinguished by slowly, steadily progressive, distinct weakening of the muscles. The process of degeneration is generally limited to the frontal lobes of the cerebrum. What Lissaur has called atypical paralysis leaves the degeneration of the frontal portions of the cerebrum comparatively absent, but, on the other hand, shows a more or less localized wasting of the hinder parts of the cerebrum. Clinically the atypical paralysis has an interrupted course. Frequently there are seizures which point to disease in the cortex of the brain. Dementia appears in fixed degree as a late development.

It is partial, combined through other defects and more like the dementia of general disease of the brain. Examination with the microscope leaves no doubt that the change in the tissue of the brain of a paralytic is more or less syphilitic in character. Sometimes with one stroke of paralysis large areas of nervous tissue may be suddenly thrown out of use and then death is apt to follow soon. In the typical paralysis both hemispheres of the brain are as a rule equally diseased. In the atypical form, however, the atrophy is of high degree on only one side of the brain. For this reason there is commonly a wide difference between the condition of the two hemispheres of the cerebrum in the dementia of old age. There is sometimes a typical paralysis of Lissaur, while the dementia itself may be unusual in character. Under this heading belong the senile aphasias. Inasmuch as there is not only one, but many atypical forms of paralysis, it is better not to consider Lissaur's form as atypical paralysis in general, but as a special kind which may be named after him. A third form might be called foudroyant. Clinically it is distinguished by an acute active delirium with extraordinary seizures and excitement and sometimes convulsions which may appear as spontaneous, but which probably are choreic. In these subjects the whole brain shows widespread acute changes. A fourth form is confined chiefly to the cerebellum. According to later researches (Naecke) the cerebellum is regularly affected in one kind of paralysis in a low or high degree, usually atrophic in character. Therefore, the first symptoms in this disease are ataxia and vertigo pointing to the cerebellum. There are also very rare forms which are referable to the optic tracts. Just what share the tracts take and what part of the tracts is affected in this paralysis further study will probably reveal. There are other unusual forms of paralysis which are probably referable to tabes. Perhaps it may be that in its course a tabes may bring about some definite localized paralyzing degeneration. As yet, however, nothing definite has been effected in this connection. However, there are occasional peculiar hallucinations and illusions in tabes which would point toward the localization of the paralyzing degeneration in the deeper elements of the brain in contradistinction to the superficial elements which are usually affected in the typical paralysis. Finally, there are the paralyses of old age, occurring after the sixtieth year, which according to histological examination are not so very rare, but yet for the most part belong to the unusual forms. Clinically they show a senile dementia. The bodily accompaniments are of comparative insignificance.

MENZER, at the Gesellschaft der Charité-Aerzte in Berlin, November 28, 1901, read a paper on the relation between angina, rheumatism of the joints and erythema nodosum. The author has found diplococci and short streptococci in tonsils removed from cases of angina with rheumatism of the joints and at the same time he has discovered the same germs in the tissue about the tonsils also. He therefore regards these points as the entrance for these germs into the blood-current. In nodes cut out of the skin during erythema he found staphylococci. He also points out that in many cases of pneumonia the disease in the lungs is probably caused by infection not through the air-passages, but through the blood-current, probably from the large number of germs in the pharynx. In scarlet fever and measles he says the cause is usually the germs which are so common in angina and bronchitis and that these diseases are only a peculiar reaction to a very common form of infection.

PEITHES, at the Medical Society of Leipsig, November 25, 1901, read a paper on his observations in Pekin while on duty there with the German troops. The arrangement of the average Chinese house is very suitable for the climate in having far projecting roofs to protect from the sun and a closed wall toward the north, made for the most part of paper, to keep out the sand storms. They have on the whole a good drainage system to take care of the water which falls in the rainy season and at other times. Most of these Chinese houses could be converted into hospitals with little difficulty. It was necessary to exercise great care with regard to water against the dangers of infection with typhoid fever and dysentery. The Chinese stoves, which gave out large quantities of carbonic acid gas, were another difficulty. By boiling the water, for which these stoves were very useful, these dangers were avoided. Sterilizing for operations was also quite easy. As to the actual medical and surgical conditions seen, the author gave the following: He operated on three cases of abscess of the liver, one after dysentery, one after typhoid fever and one tropical in origin. Only one of these died. He found the Chinese skilful and sensible in their aid to the surgeons and in their care of the sick. Such had been trained in the London Mission Polyclinic. The Chinese as a rule submit willingly to operation by foreign doctors. He also reported a number of cases, with photographs obtained with the epidiascope; one was a case of high-grade coloboma of all four extremities; another a fibroma molluscum affecting the left hand chiefly, with an abnormal development of the bone caused by the Chinese method of whipping; a case of stenosis of the urethra in a eunuch; gunshot fractures of the humerus, of the ulna and of the tibia, gunshot wounds of the ulnar nerve, and of the external iliac artery with secondary gangrene of the foot. Finally, he showed X-ray pictures of the feet of the Chinese women which show distinctly the changes in the outer form of the bones with a transformation of the whole bony anatomy of the foot.

## SOCIETY PROCEEDINGS.

### MEDICAL SOCIETY OF THE STATE OF NEW YORK.

*Ninety-Sixth Annual Meeting, Held at Albany, January 28, 29 and 30, 1902.*

SECOND DAY—JANUARY 29TH.

[Concluded from page 231.]

**New Symptom of Short Umbilical Cord.**—Dr. Samuel M. Brickner of New York detailed two cases of labor in which there was dystocia because of the presence of a very short cord in one case and of a cord of normal length in the other but wrapped twice around the child's neck. In the first case the patient complained of considerable pain and discomfort and immediately on the cessation of the pain it was noticed that the head was promptly retracted. The promptness of the retraction made it almost certain that there was a short cord in the case. Moreover, as the result of the head being drawn up from its position in the pelvis between pains there was intermittent urination that began each time just after the pain ceased. It is evident that this urination which is not voluntary is due to the fact that, the pressure on the urethra being relieved suddenly, there is a tendency for the bladder to evacuate itself as the result of the pressure of the head farther up in the genital tract on the bladder and soft tissues near it. Between pains it was also noticed that small amounts of blood were passed. When the baby was born it was found that the cord was barely ten inches and a half in length. Toward the end of the second stage of labor, when the pains were more frequent, there was no tendency to involuntary urination.

The reason for this seemed to be that there was no time for urine to collect between the pains.

In Dr. Brickner's second case the cord was shortened by being coiled around the neck of the child. It was twenty-two inches in length, but the coiling shortened it so much as to make it barely long enough to permit the birth of the child. The coils of cord were wound so tightly around the neck that when the head was born it was found impossible to release them and the cord had to be clamped with two artery forceps and cut between them. In this second case the intermittent bleeding was especially noticeable and was due to the fact that the placenta was slightly separated because of the pull upon it by the shortened cord. The definition of a short cord is not easy to give, because it is a relative matter. The length of cord necessary to allow easy birth varies in different women and with different placental insertions. The symptoms of the condition are the sharp recession of the head on the cessation of the pain, which usually attracts the obstetrician's attention at once. Other symptoms are pain at the placental site and a desire of the patient to sit up because she feels the need of the help of gravity for the birth of the child.

**Treatment.**—Very little can be done to remedy the condition without endangering the life of the child. If the cord is very short it is liable to be pulled out either at its umbilical or placental insertion. Instrumental interference in labor is apt to precipitate catastrophe. Expectant treatment is advised by all the authorities and seems to be justifiable under the circumstances.

### SYMPOSIUM ON DISEASES OF THE PANCREAS.

**Physiology of the Pancreas.**—Professor R. H. Chittenden of Yale University, New Haven, said that knowledge of the physiology of the pancreas practically developed entirely during the last century. All practical knowledge has come since Claude Bernard's time. Wirsung discovered the duct of the pancreas, but did not realize the significance of the gland for digestion. Before this time the parotid and submaxillary glands, as well as the pancreas, were considered to be ductless glands. Von Graf and Sylvius studied the pancreas more closely and realized its digestive function. Peyer, after whom Peyer's patches are named, thought that the glands which he described as occurring lower down in the intestine were meant to supply by their secretion the substances furnished by the pancreas higher up. Brunner, whose name is associated with a set of glands of the intestines, studied the pancreas with assiduity. He removed all of the organ that he could reach from animals and noted the result. He confessed that portions of the gland were so deep that he was not sure of having removed all of it and rather concluded that a portion of it was left. Dogs thus experimented upon by him lived. He concluded therefore that the pancreas was not so important as had been suggested. It is extremely surprising to realize that two centuries went by before Brunner's experiments were repeated. Instead of devoting itself to observation and experiment, the medical world in the meantime occupied itself with elaborating theories Brunner noticed that dogs from which he removed the pancreas suffered from polyuria. It is probable that this was accompanied also by glycosuria, though of course Brunner was not in a position to recognize this fact. It was not until Minkowsky and Von Mering extirpated the pancreas completely in animals and obtained glycosuria that the second important function of the pancreas, namely, its internal secretion, was recognized.

**Pancreatic Investigations.**—Very little progress was made in the knowledge of digestion for a long while after Brunner's day. Spalanzani, at the end of the eighteenth century, and Beaumont, in America, at the beginning of the nineteenth century, accomplished more than any others. It was not until 1850, however, when Claude Bernard began his investigations, that the function of the pancreas in digestion was fully realized. Bernard showed that the presence of acid material in the duodenum gave rise to a flow of pancreatic fluid. Later it was shown that the presence of alkalies in the duodenum did not produce the same effect. Pavlow showed in recent years that the pancreatic secretion is dependent on the circulation and on nervous influences. The pancreatic fluid is strongly alkaline. It contains a starch-splitting enzyme, a fat-digesting ferment and a proteolytic ferment. Notwithstanding these important functions of the pancreatic juice, the most important feature of the gland is not its value as a digestive organ, but its importance as a provider of an internal secretion. It is this property that Von Mering and Minkowsky discovered. When the pancreas is completely removed from dogs, diabetes sets in in from four to six hours. This does not stop when the animals are fed only on proteids. The animal organism is evidently able to change proteid material into glucose which is promptly excreted in the urine. The glycosuria does not stop even when the animal is fasting.

**Experimental Diabetes.**—The state induced in these animals is true diabetes. Some time after the operation acetone, oxybutyric acid and other acids characteristic of diabetes develop in the blood. These continue to be present in the circulation until the death of the animal. Death usually takes place in one week and the animal rarely lives beyond four weeks. The most characteristic lesion found after death is fatty degeneration of the liver. Forty per cent. of the liver tissue is found to consist of fat material.

The diabetes does not occur in animals from which the pancreas is removed if a small portion of the gland is allowed to remain. Not more than one-fifth of the pancreas need be left to save the animal from diabetes. If paraffin be injected into the duct of Wirsung, diabetes does not ensue. The presence of the paraffin may cause an atrophy of the pancreas, yet sufficient of the pancreatic tissue is left to provide the internal secretion that prevents the nutritional disturbance that causes glycosuria. It has been found that if a small portion of the pancreas be grafted in some other part of the animal tissue before the gland is removed entirely, complete extirpation of the gland within the abdomen may take place without the production of diabetes.

**Special Cells of Internal Function.**—Some time ago Langerhans of Berlin described certain portions of the pancreas in which the cells are very different from the rest of the cells of the gland and which have no connection with the ducts of the organ. These cells are arranged in groups that are spoken of now as the islands of Langerhans. They resemble the structure of ductless glands. They are arranged with special reference, as Opie of Johns Hopkins has shown recently, to the blood-vessels of the glands. They are very closely in relation with a rich vascular supply that recalls the glomeruli in the kidney. It is evident that these cells supply the internal secretion of the gland. When diabetes occurs as a result of the removal or of a serious lesion of the pancreas, there is an excess of sugar in the blood. This is not true in the diabetes produced by the drug phloridzin. Nor is it true in the diabetes that results from puncture of the floor of the fourth ventricle. It is evident that the removal of the pancreas does not destroy the glycolitic function. The injection of the blood of an animal suffering from diabetes into another animal does not produce diabetes.

The feeding of diabetics with pancreatic gland substance does not check the diabetes. In this the condition differs very seriously from that which results after thyroidectomy, if thyroid feeding be kept up.

**Pancreatitis.**—Professor Flexner has recently found that pancreatitis may be produced by the injection into the ducts of the pancreas of artificial gastric juice. It has often been stated that acute pancreatitis may be due to the regurgitation of acid substances from the duodenum into the gland. In Flexner's cases, glycosuria occurred as the result of the inflammatory process set up. It would seem that these observations and the results of these experiments can be of important practical service to the clinician in understanding the relation of pancreatic disease to metabolism and of the pathology of the pancreas to the digestive tract.

**Lower Blood-Pressure and Diabetes.**—Dr. Chittenden said that the injection of proteids into the circulation is not infrequently acompanied by glycosuria. The most prominent effect of the injection of proteids is the production of lower blood-pressure. It would seem that this is somehow at the basis of the set of changes that lead to diabetes. A very interesting observation has been made recently in Germany and confirmed in this country by which it is found that injections of suprarenal extract cause glycosuria. The main influence of the suprarenal secretion is upon blood-pressure. It seems not improbable therefore that the glycosuric effect is exerted through the blood-pressure changes that ensue.

**Diagnosis of Pancreatic Disease.**—Dr. W. S. Thayer of Johns Hopkins University, Baltimore, said that the diagnosis of pancreatic disease is not encouraging. Pancreatic affections are discovered as a rule only when advanced and when already fatal changes have taken place. The pancreas is one of the most important of the digestive organs and yet serious changes may take place in it without producing any characteristic results. The organ is so deep and so covered by the stomach and bowels that it is practically out of reach of abdominal palpation. It cannot be palpated in the abdomen of ordinary individuals. In very thin people it can be felt when separation of the recti muscles exists. The pus of pancreatic disease very soon passes from the organ itself into the omentum surrounding it and causes an abscess of the omental bursa. This gives rise to a distinct tumor. It is felt as a deep immobile mass, not influenced by respiration. Its position in the abdominal cavity can be absolutely determined by inflating the stomach and large intestine with gas, when, of course, the tumor will be seen to be behind these organs. About one-half of all the cases of diabetes that come to autopsy have distinct changes in the pancreas. Opie of John Hopkins has recently shown that certain parts of the pancreas, the islands of Langerhans, are always in a state of hyalin degeneration when the patient has suffered from diabetes. So far in not a single case has diabetes existed without changes in this part of the pancreas. Nor has there been a pathological lesion of these structures without diabetes.

**The Stools in Pancreatic Diagnosis.**—As the pancreas is an extremely important digestive gland, it might be thought that advanced disease of this organ might be readily recognized by changes in the stools. As a matter of fact, however, considerable change may take place in the pancreas without its being noticeable in the stools. There are a number of other digestive functions that compensate for the pancreas. Certain ingredients in the stools are suspicious, however. The presence of more fat or of more soap than usual and of less fatty acids indicates that the fat-splitting ferment of the pancreas is absent from the digestive tract. The presence of too many undigested muscle fibers is also a suspicious sign. The trypsin of the pancreas is one of the most important meat-digesting ferments.

**Acute Hemorrhagic Pancreatitis.**—For the diagnosis of this condition there is little to be aded to Fitz's classical monograph on the subject. The affection usually occurs in adult or middle life in rather stout people and usually in patients with a history of alcoholism. The diagnosis of the condition should, however, be something more than a good guess. The most important symptom is acute pain in the median line in the epigastric region, usually with a tendency to extend somewhat toward the left. Considerable pain is felt when pressure is made over the lower ribs on the left side. The pain is caused by the pressure of the fingers being communicated to the pancreas through the spleen. This pain is frequently of an intense character that resists morphine, and chloroform may be necessary to give the patient comfort. The pulse is fast, the temperature not high. There is apt to be striking cyanosis with intense prostration and collapse. The patient usually dies in from three to four days. The conditions that come up for differential diagnosis are especially biliary colic, intestinal obstruction and perforation of the intestines. The pain very much resembles that of biliary colic, but is as a rule much more intense. In biliary colic, the pain is referred more to the right side of the epigastrium and has more of a tendency to be referred upward. Intestinal obstruction is simulated by pancreatic pain, but in the latter condition there is stercoraceous vomiting; no peristaltic movements are visible through the abdominal wall, no inflated coils of intestines are to be seen, and the localization of the pain is apt to be higher up. The differential diagnosis of perforation of the intestines is not easy except that there is much less collapse and the condition less rapidly reaches its acme. Mesenteric infarction gives a set of symptoms that resemble not a little acute pancreatitis. However, the symptoms, as a rule, are less violent.

**New Urinary Symptom.**—In a recent case of pancreatitis at Johns Hopkins Hospital, Opie found a fat-splitting ferment in the urine obtained from the dead body at autopsy. So far there has been no opportunity to confirm this observation in other cases and scarcely enough urine was obtained to make assurance absolute. No fat-splitting ferment has been found in the urine of other subjects examined for the purpose, however, and it seemed not improbable that this may give a new and valuable diagnostic sign for the recognition of acute pancreatic conditions.

**Chronic Interstitial Pancreatitis.**—The indurative inflammation of this form of pancreatic disease is thought to be due to an ascending affection from the intestinal tract. Vomiting is supposed to be the occasion for the regurgitation of some of the contents of the duodenum through the papilla and the duct to the pancreas. In this case the inflammatory process spares the cells of the islands of Langerhans, which are not directly in connection with the duct system of the pancreas. Diabetes does not always occur in these cases, and the reason is probably this sparing of the Langerhans areas. A certain association between cirrhosis of the liver and diabetes has been noted in a considerable number of cases. When it occurs it is the physician's duty to suspect the presence of interstitial pancreatitis. Chronic inflammatory condition of the pancreas is due to the same causes as the hepatic cirrhosis. The presence of a stone blocking the duct of the pancreas may cause a chronic inflammatory condition that finally leads to atrophy of the gland. This does not at any period, however, give rise to acute pain and it is probably impossible to recognize the presence of stone *intra vitam*.

**Pancreatic Cysts.**—Large cysts can be recognized by palpation. They may occur as the result of injuries. Some of them may be very large. One reported cyst filled the greater part of the abdomen. Retention cysts of the pancreas are usually small and as a rule cannot be recognized on palpation. Secondary carcinomata of the pancreas are not readily recognizable. Large tumors are not the rule, and it is only their induration that sometimes makes it possible to feel them through the abdominal walls.

**Surgery of Pancreas.**—Dr. Roswell Park of Buffalo described the methods and technic of operations upon the pancreas. He said that recent experience has shown that it is perfectly possible to reach the pancreas for surgical intervention without seriously endangering the patient's life, and that it is possible to remove portions of the gland and to open cysts without submitting the patient to unjustifiable risk. The advance in the surgery of the pancreas represents some of the best work that has been done in surgical science during the last decade. Notwithstanding the way in which the pancreas is bound down by firm tissue supports, the organ sometimes becomes loose and may be quite movable. Prolapse occurs and sometimes makes the organ quite easy of palpation from the abdominal wall. Functional disorders of digestion result from prolapse of the pancreas, partly because of the interference with pancreatic function and also because of mechanical interference with other organs and because of the influence of nervous reflexes upon important intra-abdominal functions. Dr. Park said that malignant tumors of the pancreas are practically without hope. Excision of the splenic end of the pancreas is not only justifiable, but perfectly possible. The splenic artery runs along the upper border of the pancreas and may be wounded during operations upon the gland. This artery was tied once by Mikulicz without serious result, and both the splenic artery and vein have been tied without necrosis resulting. The removal of portions of the pancreas is perfectly feasible. In six out of nine cases in which this was attempted the result was success. The old practice of opening the cyst of the pancreas and fastening the cyst-wall to the edges of the abdominal wound may still be followed with hopes of good results. The secretion may continue for a long time, but eventually the condition will improve. In a recent experience a copious secretion of pancreatic fluid for months issued from a cyst and Dr. Park almost despaired that his patient would ever be dry again. After a time however complete and very satisfactory recovery took place.

**Acute Pancreatitis.**—This affection presents differing clinical features according to associated complications. Fat necrosis or suppuration, or hemorrhage may occur; each of these conditions gives special indications. The symptoms frequently point to some severe condition of the abdominal organs that may be intestinal perforation, or acute intestinal obstruction, or pancreatitis. An exploratory incision must be made to render the diagnosis absolute. Wherever pus-formation has taken place the indication, of course, is for its evacuation. The abscess should be thoroughly opened and the lesser cavity of the peritoneum packed with gauze. Any delay in the evacuation of purulent collections in the pancreas is almost sure to lead to a fatal issue. The outlook in these cases, however, is not very encouraging, even under the most favorable circumstances.

**Hemorrhagic Pancreatitis.**—There is some mysterious connection between the pancreas and tendencies to hemorrhage. Anders collected forty-six cases of hemorrhagic pancreatitis. The more acute the symptoms of any form of pancreatitis the greater the danger. If pus formation does not follow hemorrhage, there is not very serious danger. Pus, of course, must be removed and posterior drainage instituted. Necrotic portions of the pancreas must be removed as far as possible and drainage instituted in order to help the tissues in the disposal of necrotic material. It is perfectly possible to drain the pancreatic space from behind. Even the subphrenic space can be drained through an incision between the tenth and eleventh ribs in the axillary line, as has been shown by a recent experience of Lund. In a late case of Mayo fat necrosis took place, although the patient was thought to be suffering from gangrenous cholecystitis and the drainage was provided on the right side. The surgeon should intervene as early as possible when pancreatic symptoms are present. Dr. Park has established as a rule of action in these cases for himself the same rule he follows with regard to appendicitis and fracture of the skull, namely, *when in doubt operate early*. When delay is possible there will usually be no need of operation at all. When symptoms are at all serious, however, delay is almost sure to be regretted and the surgeon has lost an opportunity to save life.

**Pancreatic Pathology.**—Dr. George Blumer of Albany said that the most important discovery in pancreatic pathology made in recent years was that by Opie of the connection between the lesions of the islands of Langerhans and diabetes. These islands of pancreatic cells have in connection with them a vascular arrangement which resembles somewhat that of the glomerulus of the kidney. So long as these portions of pancreatic tissue remain unchanged diabetes does not occur. If only one-fourth or one-fifth of the pancreatic glands remain no diabetes occurs in experiments upon animals. This is not due to any effect upon the nervous system in this part of the body, because the warding-off of diabetes may be secured also by the transplantation of the glands. It is evident that some internal secretion of the pancreas prevents diabetes. One serious objection to a theory connecting the pancreas with diabetes has been the fact that fatal diabetes sometimes runs its course apparently without changes in the pancreas. It is possible, however, that serious changes in the islands of Langerhans might be missed, for they occupy only a small portion of the gland. Some years ago Hansemann of Berlin showed that, even in cases in which the pancreas was seemingly completely destroyed by tumor formation, some typical pancreatic tissue remained. These portions might well supply the internal secretion necessary to prevent diabetes. In cases in which pancreatic tumors practically completely replace the gland itself, Hansemann suggested that the tumor cells, though not in themselves true pancreatic cells, are the descendants of pancreatic cells and might well furnish a similar internal secretion. This explanation seemed far-fetched to some pathologists. It is well known, however, that metastatic liver tumors are frequently found to contain biliary secretion and salts of biliverdin have been demonstrated to exist in them.

**Acute Pancreatitis.**—This may be produced by a number of micro-organisms and experimentally has been set up by injections of diphtheria bacilli, the bacilli coli communis and the bacillus pyocyaneous. It is not impossible that these micro-organisms find their way into the pancreas from the intestine. There are various forms of antiperistaltic movements in the intestine that may favor this regurgitation into the pancreatic duct. Hlava, the pathologist at the Czechish University, at Prague, showed that by injecting artificial gastric juice into the pancreatic duct, in imitation of what he considered might occur dur-

ing vomiting, pancreatitis was set up. Blumer himself has seen a case in which a stone lodged in the ampulla of Vater, the common opening of the biliary and pancreatic ducts into the intestine, prevented the outflow of fluid and yet did not completely close up the connection between the biliary and pancreatic passages. In this case the pancreatic duct was found bile-stained, showing that, as might be expected, bile had flowed over into the pancreas. Bile is secreted under greater pressure than is the pancreatic fluid, so that this is the natural consequence of such a condition.

**Biliary Etiology of Pancreatitis.**—It is easy to understand how hemorrhagic pancreatitis might occur as a consequence of the irritating presence of bile in the pancreas. In the majority of cases of acute pancreatitis there is a history of gall-stones. In a number of cases a stone has been found in the common ampulla of the duct. Hlava's experiments have been confirmed by Flexner's observations.

**Hemorrhage or Inflammation.**—A question which always arises in these cases of hemorrhagic pancreatitis, Was the hemorrhage the first symptom or did inflammation precede the hemorrhage? Flexner's observations seem to show that the hemorrhage and inflammatory condition are simultaneous. The presence of blood alone would not give rise to inflammation. This has been shown experimentally on animals by the injection of sterilized blood. Inflammation alone would not give rise to hemorrhage, without some additional cause. The chronic induration which occurs comparatively frequently in the pancreas is due to the presence of small amounts of bile repeatedly finding their way into the pancreatic duct. In operations for biliary colic it is not an unusual thing for the operator to find that the head of the pancreas is quite hard. This has led sometimes even to the suspicion of malignant disease of the pancreas. It is only a condition, however, of chronic indurative pancreatitis.

**Pancreatitic Fat Necrosis.**—The fat necrosis that occurs so frequently in connection with pancreatitis is due to the steapsin finding its way over the tissues. This has been confirmed by Flexner and by Opie. The mechanism of distribution of this fat-splitting ferment is hard to understand. How it finds its way to distant tissues is the next question that must be cleared up in order to make the process of fat necrosis clear.

**Surgery of Acute Pancreatitis.**—Dr. Joseph C. Bloodgood of Johns Hopkins, Baltimore, said that acute pancreatitis presents two distinct features. The first is to be seen only during the early hours, or perhaps during the first day or two of the disease. The second is the suppurative condition that results from the acute inflammatory process or from the peripancreatic abscess which forms as a result of the virulent infection. Before suppuration sets in, surgery can accomplish nothing and interference is contraindicated. As soon, however, as suppuration takes place, the pus should be evacuated. All hope of success in these cases depends on the early recognition and the early incision of the abscess.

**Expectant Treatment.**—There are about eleven cases in recent literature in which recovery from acute hemorrhagic pancreatitis took place without any operation. In two of these cases not long after recovery from the disease, death took place from an entirely different cause and the distinct signs of a healed hemorrhagic pancreatitis were found at the autopsy. One patient was aspirated by Brentano, who withdrew bloody serum, thus apparently proving the diagnosis correct. One of the cases was reported by Jacobs and occurred in a child who had just recovered from an attack of mumps. This is a doubtful case. In one very singular case most of the pancreas sloughed away and was passed through the bowel.

**Deaths from Pancreatitis.**—While there are a certain number of recoveries from pancreatitis there are a number of reported fatalities. Twenty-one patients died without operation. Three of these reached their fatal termination within twelve hours. One of the patients survived as long as the seventh day. As a rule operation in these cases only serves to confirm the diagnosis and is of no benefit to the patient. Nineteen cases operated upon died. Many of them died on the operating-table. Practically all of the patients died from collapse, most of them within forty-eight hours. For non-purulent pancreatitis the expectant treatment is better than operative interference.

**Purulent Pancreatitis.**—As soon as pus forms it must be removed. In some thirty cases of purulent pancreatitis operated upon there are nine reported recoveries. Eleven patients treated expectantly died without a single exception. As a rule in the operative cases operation had been delayed too long. If done at any early stage surgery will save lives.

**Gall-stones in Pancreatitis.**—The diagnosis of pancreatitis must always remain a little doubtful. There are certain features, however, that encourage operation early in the case and without waiting for absolutely definite symptoms. If the symptoms of acute pancreatitis develop in a patient who has suffered from gall-stone an exploratory incision should be made early, for the diagnosis of pancreatitis is almost surely correct.

**Traumatisms of Pregnancy.**—Dr. Denslow Lewis of Chicago said that as the result of a very interesting case in his own practice, nearly fifteen years ago, he had collected from literature a series of cases of the injuries that had been inflicted upon women during the course of pregnancy. His own case occurred in the wife of a physician. Her husband was endeavoring to perform an abortion on her at the third month of her pregnancy, using a male silver catheter to rupture the membrane and loosen the fetal attachments to the uterus, when the silver catheter disappeared. Dr. Lewis was consulted some twenty-two hours after the event, and made an abdominal incision, but had great difficulty in locating the catheter. Practically all of the woman's intestines had to be removed from her abdomen before the catheter was found, up under the liver. It was removed and the abdominal incision closed. The pregnancy continued despite the surgical interference, and at the end of six months a healthy child was born and is still alive. In another case there was a history of the patient endeavoring to bring on abortion by the introduction of a glass rod into the uterus. It disappeared, but no abortion took place. About three weeks after abortion occurred, but the glass rod not having appeared the girl became alarmed. The rod was found near the left kidney and was removed without difficulty and without serious consequences. Dr. Lewis has found a laminaria tent in the peritoneal cavity that had found its way there as the result of attempts at dilatation of the uterus. Such foreign bodies may remain in the uterus for a long time without producing serious inconvenience. Dr. Lewis once removed a wooden stick five inches long and almost as thick as a lead pencil that had remained in the uterus for nearly two years after an abortion. A bougie six inches in length and the size of an ordinary male sound, that had been used for purposes of abortion, appeared through a fistula over the sacrum. It had ulcerated its way out through the thick tissues of this neighborhood without producing anything more than local symptoms. Hairpins and knitting needles are sometimes introduced to great depth through the abdominal wall with the idea of

bringing on abortion. In one case a young woman introduced a knitting-needle through her umbilicus for a distance of over five inches. She finally pushed it completely into the abdominal cavity. Pus came from the navel, but the knitting-needle made its exit through the vagina. In one case where a knitting-needle was used for the purpose of abortion, it failed to produce the desired emptying of the uterus but left a permanent pigmented spot on the child's buttocks. Dr. Lewis considers that any practitioner when called to see a case of abortion should suspect the possibility of its having been procured by some instrumental means and should looke for the foreign body. This method of dealing with these cases may prove life-saving. If the membranes are ruptured in an abortion, it is better to remove all the fetal products at once. The use of the curette under these circumstances, however, is dangerous. Every physician of any considerable experience has had opportunity to observe that the curette may easily pierce the uterine walls and enter the abdominal cavity.

**Removal of Foreign Bodies.**—As a rule a vaginal incision should be made if it is possible to remove the foreign body in this way. It by no means necessarily follows that such operative interference may produce abortion. It is wonderful how much disturbance the pregnant uterus will stand without emptying itself. A number of pregnant women have fallen down stairs and yet recovered completely without premature delivery. In one case a pregnant woman was caught between a wall and a heavily-loaded wagon. Her pelvis was crushed so that the internal diameter of the pelvis was less than two inches, but she recovered completely and carried her child to term. The outlook in these cases is not nearly so hopeless as might be anticipated.

**Abdominal Wounds.**—Insane women have on a number of occasions performed a Cæsarian operation on themselves, cutting open their abdomens and wombs and removing a living child. Many of these women have recovered without serious consequences. Dr. Harris of Philadelphia collected a series of cases absolutely authentic and well substantiated in which women had been eventrated during pregnancy and their wombs opened by the horns of cattle. The results of these injuries showed that the artificial removal of the child in this way gave less fatality than a Cæsarean operation in hospital practice before the days of antisepsis.

**Tendon Transplantation.**—Dr. Arthur W. Elting of Albany read a paper on the use of tendon transplantation in the treatment of paralytic deformities. He reviewed the history of this form of surgical interference in paralytic cases and showed how much benefit has been derived from it. Formerly paralytic deformities were considered absolutely hopeless as regards any possible benefits to be derived from surgery. The deformity was nervous in origin and was therefore considered beyond the domain of surgical interference. Now the condition of such patients can be so much improved that from being helplessly bedridden they become well able to help themselves and are even able to engage in reasonably laborious occupations. Dr. Elting spoke of the various methods that had been employed and commended especially the idea of splitting the tendon of healthy muscles in order to divide part of its insertion with paralyzed muscles. Some surgeons now attach the tendon of the muscle to be transplanted directly to the periosteum of the bone that is to be affected, thus securing with absolute certainty the movement to be expected. Dr. Goldthwaite of Boston introduced the method of quilting the tendons into one another in order to secure firm adherence. Dr. Elting has recently applied a modification of this method in four cases. In two of his patients both feet were affected by the paralysis. In the other two only one limb was affected. These patients have been transformed from helpless cripples into active members of the family and two of them consider themselves practically well.

**Pronunciation of Hallucis.**—Dr. R. H. M. Dawbarn of New York said that Dr. Felting was the only surgeon whom he had heard use the term who knew how to pronounce properly the word "hallucis." It is usually caled hal-lu-cis, the second syllable being made long. This word has a peculiar history. There is often mention of the word hallux in such expressions as hallux valgus. As a matter of fact, there is no such word in Latin as hallux. There is such a word as hallex and its definition is pollex pedis, that is the thumb of the foot. Since one is using scientific terms, supposedly of Latin origin, it is only proper Dr. Dawbarn thinks to use them with due regard to their true signification.

**Pneumogalactocele of the Breast.**—Dr. J. Milton Mabbot of New York described a case in which the patient suffered from a tumor of the breast that developed after an abscess. It was thought that milk alone would be found in it, because there were no general inflammatory symptoms. Percussion over the tumor, rather to the surprise of the surgeons, gave a tympanitic note that showed the presence of gas. Dr. Mabbot prefers the term pneumogalactocele mastitis aerogenes for these cases, because there is no inflammation present, and milk, not pus, is found. The etiology of the tumor was somewhat in doubt. The fluid removed was found to contain large, somewhat broken-down cells resembling colustrum corpuscles and evidently of milky origin. From the fluid a micro-organism was isolated that belongs to some hitherto unidentified class. This micro-organism grows in long thin filaments arranged in long chains. Some time before the development of the tumor normal salt solution had been injected under the breast because of loss of blood during labor. It was thought that perhaps air might have found its way into the substance of the breast during this process.

**Micro-Organism and Gas.**—It is possible that the gas collected in the case may have been due to the presence of this micro-organism, which was actively motile and grew well on most of the ordinary culture media. The fluid was not examined for anaerobic micro-organisms and the possibility must almost remain that it was a microbe belonging to this class that caused the gas formation. The gas in the tumor was collected over water in a test-tube and was sent to the laboratory to be examined, but proved not to be sufficient in amount to enable its character to be recognized with absolute certainty. A curious observation as the result of the existence of air and liquid together in the cavity of the tumor was the occurrence of distinct succussion sounds, splashes and bubbles, at a distance of several feet from the patient when the tumor was shaken.

**Simple Home Modification of Milk.**—Dr. Rowland G. Freeman of New York said that the important feature of the artificial feeding of children is the imitation of mother's milk and the preparation of food bearing some definite relation to the needs of the growing organism. Such food need not be prepared with absolute, but with approximate correctness. Dr. Freeman suggests a method by which milk modification can be carried on at home without undue complexity of directions. Gravity cream on an average contains four parts of fat to one of proteids. If mixed with an equal quantity of milk the proportion is about two to one. As a rule the difficult part of the problem of preparing infant food is to obtain the proper proportion of proteids and fat. If these are once obtained sugar may be added. As gravity cream contains about four parts of fat to one of proteids, this can well form the basis of all milk modi-

fications. Simple dilution with milk will give the varying proportions of fat and proteid and the addition of sugar obtained for the purposes in proper weighed amounts is easily effected. As a rule the number of feedings in the day should be decided on and then the quantity of food necessary for the day prepared at once according to the method selected.

THIRD DAY—JANUARY 30TH.

**Double Dacryo-Adenitis.**—Dr. D. H. Wiesner of New York reported a case of double infection of the lacrimal glands—an extremely rare affection. The ailment causes no little discomfort. Hot applications are usually advised, but Dr. Wiesner found that ice-applications relieved the patient more rapidly and satisfactorily than the commonly recommended hot applications.

**Treatment of Pneumonia.**—Dr. Reynold W. Wilcox of New York read a paper on the treatment of pneumonia by the method suggested some time ago by French clinicians. The feature of this method of treatment consists in the effort to overcome the toxemia, which is usually the most serious element in a case of pneumonia. The toxic symptoms are best combated by means of large and increasing doses of creosote. The remedy must be pushed to tolerance. An important part of the intoxication in pneumonia that weakens the patient and renders the prognosis more unfavorable comes from the absorption of poisonous products from the intestinal canal. An important accessory feature of the treatment then is the administration of intestinal antiseptics and the maintenance of the intestinal canal as far as it may be possible in a state of asepticity.

**Mortality from Pneumonia.**—In addition to the existence of complications or organic lesions in important structures at the time the pneumonia developed, the most important etiological factor and mortality from pneumonia is undoubtedly the toxemia. The results obtained with direct antitoxic treatment have been most encouraging. Creosote especially has proved its value and there seems no doubt that the mortality in private practice under the use of this method of treatment should come down to three or four per cent. in the very near future.

**Obesity of Adolescence.**—Dr. Heinrich Stern of New York read a paper on those cases of obesity which develop during the third decade of life and signs of which are already present during the second half of the second decade. It is not infrequent to find that people put on weight about the close of their second decade of life. This is as a rule distinctly pathological and not physiological. It needs prompt treatment, and to allow it to continue is to prepare for serious discomfort before middle life and even a shortening of life. In children there is a distinct tendency to put on flesh, but this does not usually make itself very noticeable until between the ages of ten and twelve. As a rule, shortly before puberty, individuals become stouter than before. It is as if Nature were accumulating force to meet the drain that is about to come. The fat put on at this period corresponds somewhat to the obesity that occurs after castration or the menopause.

**Adolescent Obesity.**—There is a transitory obesity of adolescence just before the acme of physical development is reached. In this form the accumulation of fat tissue is apt to be more on the chest, on the breasts and on the extremities, than in ordinary obesity in which fat accumulates on the abdomen. This form of obesity is not always associated with the consumption of large amounts of food, but there may even be a certain amount of anorexia or a capricious appetite. Dr. Stern is inclined to place the etiology of this form of obesity and its accompanying symptoms in some disturbance of the thyroid or parathyroid glands.

**Thyroid in Obesity.**—Just about puberty the thymus gland disappears and a marked increase of the thyroid gland occurs. Girls have a more marked increase of the thyroid gland than boys. They also have a more distinct tendency to put on flesh. It would seem that the female organism needs more thyroid substance for proper metabolism than does the male organism. Any functional disturbance of the thyroid gland is noted more in women and leads to obese conditions. It is well known that thyroid medication has a distinct tendency to lessen obesity, especially in young people. This would seem to show that some absence of thyroid function is at the bottom of the tendency to obesity.

**Accompanying Symptoms.**—At times the tendency to obesity is accompanied by cardiac dyspnea and chlorosis. These occur only in extreme cases. For such patients Dr. Stern has found the following formula of great service:

℞ Ac. Arsenious .....gr. 1/60
Adonid .....gr. 1/12
Thyroid gland.....gr. ij
Sig.: One powder two or three times a day.

**Broken Necks.**—Dr. Reginald H. Sayre of New York said that in popular medicine a broken neck is usually considered to be inevitably fatal. Most of the cases actually die, but some of them can be saved. Dr. Sayre exhibited a series of photographs of patients who had suffered from broken neck and described the characteristics of different forms of the injury and the treatment proper for each class of cases. Many of the cases survive only to perish later from bed sores or bladder infection, sometimes due to instrumentation with dirty catheters. Such accidents must, of course, be sedulously guarded against.

**Diagnosis of Cervical Fracture.**—The diagnosis of fracture of the cervical vertebræ can be made from the position of the head and actual palpation of the position of the bones. In fracture of any of the three upper vertebræ, the head is twisted as in torticollis and is somewhat raised. Dr. Sayre contrasted the position with that of a case of inflammation of the second cervical vertebra in which the face is always held lower. The X-rays are of importance in the diagnosis of these conditions, but it is often extremely difficult to obtain satisfactory radiographs.

**Treatment.**—These cases need supporting treatment much longer than has been thought. Correction should be made slowly and gradually. Immediate correction may prove fatal. Dr. Sayre has devised a plaster-of-Paris helmet, which is put on at first in connection with a plaster-of-Paris jacket and then the helmet is cut loose from the jacket after some days and the head gradually straightened. It is impossible to keep fractures of the cervical vertebræ properly immobilized with sand-bags and other temporary apparatus; therefore some form of permanent apparatus must be employed. The prognosis of the cases is not nearly so bad as has been thought and several men with broken necks are exhibiting themselves in the museums throughout the country.

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## NEW YORK ACADEMY OF MEDICINE.

SECTION ON ORTHOPEDIC SURGERY.

*Stated Meeting, Held December 20, 1901.*

George R. Elliott, M.D., Chairman.

**Rheumatoid Arthritis.**—Dr. Royal Whitman presented a child, twenty-one months old, suffering from a condition which had at first been mistaken for and treated as tuberculous disease of the knee-joint. The

particular interest lay in the fact that it was rheumatoid arthritis; the mistake was not uncommon when the larger joints alone were affected, as the signs were similar in the early stage. At present, both knees are involved, also a wrist, ankle and the fingers. The case was presented because rheumatoid arthritis was rare in young children and to call attention to a common error in diagnosis.

**Torticollis.**—Dr. Whitman presented a patient showing the ordinary treatment of confirmed torticollis. The permanency of the cure was the especial point to be noted. The treatment was by the open method of complete division of all the contracted tissues, overcorrection of the deformity and fixation for several weeks in plaster of Paris. The advantage of a thorough operation was the ability to dispense with apparatus, while after the subcutaneous method apparatus was often necessary because it is not always possible to completely overcome all deformity. The case showed to a moderate degree hemiatrophy of the face, which was very marked in some instances.

**Radical Treatment of Clubfoot.**—Dr. Whitman also showed the result of radical treatment of clubfoot in a child eight years of age. One foot had been cured by the ordinary means in early life; the other foot was operated upon July last. The foot that recovered first was much larger than the other—an illustration of the effect of deformity in retarding development. He considered the Phelps open operation the best of the more radical operations for the ordinary clubfoot of childhood and adolescence, the advantage being that the inner border of the foot was lengthened instead of the outer side being shortened, as was the case in certain operations on the bones. This patient was not confined to bed for more than one week; after that it was allowed to walk about on the plaster-of-Paris bandage.

Dr. W. R. Townsend said, in referring to the case of torticollis operated upon by Dr. Whitman, that he could not agree with the latter as to the disappearance of the scar. He had seen many of these scars which looked well shortly after operation, but which had a tendency to grow more unsightly; he had even known keloid to develop. He thought that at all events patients should be warned of the possibility of a scar remaining.

Dr. Homer Girney stated that he had seen a number of cases treated by both methods, open and subcutaneous. He had seen several scars disappear in young children. He considered the subcutaneous method the safest except in very severe cases.

Dr. T. Halsted Myers said a transverse incision would give the same exposure of the operative field and would enable the deformity of the scar to be better concealed.

Dr. Whitman had had no experience with keloid developing late in the scars; if such appeared it was usually within a few months after operation, he thought. He stated it as his experience that the scars practically disappeared.

**Extreme Deformity of Rickets.**—Dr. V. P. Gibney presented two cases showing extreme deformity of rickets. The upper arms, back and legs were involved, in one case giving the typical deformity of the disease. The second patient showed the lateral spinal curvature, the typical deformity of the thorax, beaded ribs, also deformity of the legs and arms. Both were being treated in the Bradford frame made convex, in conjunction with general constitutional treatment.

**Clubfoot Shoe.**—Dr. Gibney also presented a patient wearing a clubfoot brace seen in Hartford and used by Dr. Cook as a modificaton of Taylor's clubfoot shoe. In private practice he had been able with this apparatus to control some of the most obstinate cases. In the case presented, treatment was begun when the patient was six weeks old. Several forms of apparatus had been used from time to time, but relapse had occurred. At present, after wearing the modified shoe, the child holds its foot in perfect position and walks without deformity. The apparatus is a good retentive one, though it does not take the place of operation.

**Talipes Equino Varus.**—A case of talipes equino varus, a child twenty-one months old, was also shown by Dr. Gibney. The deformity was extreme and was corrected under an anesthetic and various methods had been employed; the last time it was seen it presented the typical "reel foot." It was thought that if the head of the astragalus could be removed, the fascia divided and the foot replaced a cure could be effected. A relapse occurred after six to eight months. Under anesthesia the foot was forcibly put in calcaneovalgus. Later a clubfoot spring with pelvic band was put on and served fairly well, except that two sets of apparatus had to be kept on hand. Finally, the modified braces were used successfully.

Dr. Gibney also presented a boy, eleven years old, for diagnosis. He came to the hospital some months ago with the history of an injury four weeks previous, having fallen, striking his hip. He got up and limped about, but the next night could not sleep; he had fever with delirium. On admission to hospital he walked with thigh flexed on pelvis, had little fever and complained of pain in the hip extending to the knee. He was thought to have hip disease and was treated with pulley in bed. After three weeks, the angle of extension was 110 degrees, flexion normal, practically no pain on pressure. There was no apparent abscess and the spinal column was not involved. The diagnosis became doubtful. In October fluctuation was thought to be detected under the vastus externus. Incision was negative. The original diagnosis was finally abandoned and the case was considered one of periarthritis.

Dr. Myers asked Dr. Gibney what would be his prognosis in the case of the spinal curvature in the rickety patient.

Dr. Whitman stated in reference to the case of rickets, that when the patient entered the hospital the spinal deformity was thought to be the most serious of the distortions, and that for that reason the patient was placed on the frame.

Dr. Gibney said that Dr. Whitman had partly answered the question of prognosis. He thought the child should be kept in overextension for a while longer, and that after that a brace would keep the spine in place; as the child developed the deformity would be in a measure outgrown. He considered the cases easy to manage so long as they could be kept under observation in a hospital; outside, the prognosis was not so good; no manual force had been applied to these cases yet.

Dr. Judson said that the clubfoot shoe that was shown seemed more like a modified Taylor brace. It was evidently an effective apparatus. He noticed the absence of an ankle-joint, which was very properly omitted, as better leverage was thus obtained and there was no good reason for the fear that want of motion in the brace would impair ultimate motion in the ankle.

**Incipient Hip Disease; Recovery.**—Dr. A. B. Judson presented a girl, eight years old, who had been before the Section on November 16, 1900. At that time the history of left hip-disease, covering twelve weeks, had included inconstant lameness, knee pain and reflex, night cries, muscular atrophy and limitation of motion. A steel crutch and high shoe had been worn from November, 1900, to November, 1901. Recovery had been so complete that the only traces were ⅜ inch shortening and ¼ inch muscular atrophy. The case illustrated

the importance of early diagnosis. Traction and immobilization had not been sought. Recovery took place when the limb was freed from the weight of the body by being made pendant. In this artificial environment the focus, which otherwise would have broken into flame, was quenched.

**Device for Deformities of the Knee.**—Dr. Judson presented a girl, ten years old, wearing a device useful in deformities of the knee. The patient was Case III., white swelling of the knee, presented to the Section October 20, 1899. The problem was to prevent the fixative brace from seeking the inner side, where it caused knock-knee, and to keep it behind to oppose flexion. The brace was made of one piece with the shoe, in such a way that, when the shoe was on, the brace would be in the proper place. A light steel bar extended up the leg and was fastened to the upright part of the brace by a sliding ring keeper. Its lower part, bent at a right angle, was screwed to the under side of the heel of the shoe at an angle to secure the effect desired, keeping the brace behind to oppose flexion or to the outer side to oppose knock-knee.

**Softening of the Tibia.**—Dr. J. P. Fiske presented a case of localized softening of the tibia at the age of adolescence. The patient, a girl, now fourteen years of age, was first seen in 1898, when she complained of localized pain in the lower part of the leg well above the ankle-joint, thought to be a referred pain due to improper gait. A strap bound around the part brought no relief. The curve at the lower part of the tibia increased. At this time a positive diagnosis of tuberculous disease was made by a distinguished consultant and fixation advised; plaster splint was worn for six months. At the end of that time the leg was in the same condition except that atrophy had occurred; measurements showed that the tibial curve had increased. Two months later exploratory incision revealed negative results. In February, 1901, an osteotomy was performed in the lower quarter of the tibia, the fibula shortened one-eighth inch, the deformity corrected and the leg put in plaster. Ten days after the operation the patient was fitted with an ambulant splint and six weeks later walked without the apparatus. Since then there have been no symptoms. The diagnosis of softening of the lower part of the tibia seems to have been the proper one. There is no difference in the length of the tibiæ.

**Congenital Deficiencies.**—A second patient presented by Dr. Fiske was one of congenital absence of the fibulæ and outer side of foot, with equinus. The patient was seen at the age of one year. The fibulæ and several of the metatarsal bones were absent and the heel was undeveloped. An osteotomy was performed at once with tenotomy on the tendo-Achillis, and the position of the feet corrected. At present the child is able to go about with a light brace.

**Double Congenital Clubfoot.**—Dr. Leonard W. Ely presented a patient, one year old, showing the result of treatment for double congenital clubfoot. The point of interest was that the right foot was treated uninterruptedly with a brace and the left with plaster of Paris. In contradiction to the general idea that plaster of Paris causes atrophy, the right leg was shown to be much smaller than the left.

**Tendon Transplantation.**—Dr. R. A. Hibbs showed the result of tendon transplantation done in July, 1901, for paralysis of the tibialis anticus muscle. The extensor proprius hallucis was inserted into the periosteum of the scaphoid and its distal end into the first division of the common extensus. The patient, twenty-one years of age, exercised a good deal of intelligence in perfecting the action of the muscle with its new attachment. The foot had been in a position of marked valgus, with the scaphoid very prominent. The deformity was completely corrected. He stated that in all his cases during the past two years, when possible, he had attached the transplanted muscles to the periosteum.

Dr. Myers said the point mentioned by Dr. Hibbs, attaching the tendon to the periosteum, was important; he did not believe in matting tendons together; the connecting bands stretched and the union was ineffective. He had just dissected such a case. If the tendons were divided and the live one united to the tendon of the paralyzed muscle, often there was also stretching.

Dr. Whitman said that the operation of periosteal tendon transplantation had been extensively practised by Lange of Munich, who had reported many cases; his own experience with the operation had been favorable.

Dr. Fiske emphasized the importance of transplanting muscle tendons into the periosteum, especially when the muscle was to work at raising the inner side of the foot or the heel.

**Congenital Dislocation of the Hip Under Treatment.**—Dr. Elliott presented a child, aged two years, upon whom he had reduced a congenital dislocation of the hip by the Lorenz non-cutting method, showing the bandage in position. He presented the patient to show the position of the leg when the dislocation had been successfully reduced. A slight degree of hyperabduction was necessary with the knee pressed back slightly posterior to the transverse axis of the pelvis. There was frequently considerable difficulty in getting the head of the femur into the acetabulum and in getting the knee down to the mid transverse pelvic plane or posterior to it, but unless that could be accomplished the operation should be abandoned as a failure, as relapse was certain. In the case presented he felt quite positive of a good result.

## BOOK REVIEWS.

GYNECOLOGICAL PATHOLOGY. A MANUAL OF MICROSCOPIC TECHNIQUE AND DIAGNOSIS IN GYNECOLOGICAL PRACTICE. FOR STUDENTS AND PHYSICIANS. By Dr. CARL ABEL, Berlin. Translated and Edited by SAMUEL WYLLIS BANDLER, M.D. With a Chapter on the Embryology of the Female Genitalia and the Pathological Growths Developing from Embryonal Structures. William Wood & Company, New York.

IT is only reasonable that, with the development of specialties in medicine that concern the treatment of disease, we should find similar differentiation in such branches of the science as pathology. The present book is a most carefully written and valuable treatise on the subjects enumerated in the title and especially available for the gynecologist and the surgeon.

Part I. is devoted to technique, especially concerning the obtaining of material, the further treatment of it, the management of material obtained by laparotomy and autopsy and a list of instruments necessary for good work. Part II. deals with diagnosis and details the stages for the recognition of all conditions beginning with inflammation and ending with neoplasms. Such affections are discussed as they occur in the vulva, vagina, cervix, body of the uterus, tubes, ovaries and parovaria. Part III. is given up to the embryology of the sexual organs of the female. Special importance is given to pathological growths which develop from embryonal structures. Brevity and clearness mark the style. The text is rendered more comprehensible by one hundred admirable engravings, with numerous distinct explanatory notes for each.